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ABSTRACT

The paper criticizes the practice of providing sheltered occupational environments to severely handicapped individuals and considers ways in which public school programs and adult service systems can be arranged to maximize vocational functioning. Following an operational definition of meaningful work, the chapter analyzes reasons for the restrictive nature of sheltered vocational environments, including that work related skills are rarely required or developed, instruction is not emphasized, deviant actions are tolerated, and opportunities to benefit from interactions with nonhandicapped workers are not available. Followup data is cited to show trends toward functioning in nonsheltered vocational settings. Among reasons suggested for the growth-promoting nature of nonsheltered environments are availability of a continuous flow of meaningful work, greater opportunity to acquire and perform work related skills, and a social climate more conductive to success and personal growth. Relationships between meaningful work and pay are examined, and sheltered versus nonsheltered settings are compared in terms of cost, cost efficiency, and quality of life. Timelines for direct and indirect vocational instruction are offered. The nonsheltered vocational preparation program at the Madison (Wisconsin) Metropolitan School District is reviewed in terms of its development and its progression of services from middle schools to high schools and to post school services. Characteristics of successful delivery systems for severely handicapped adults are noted, including meaningful coordination between school and postschool agencies and instructional program emphases. (CL)

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October 1, 1983

Teaching Severely Handicapped Students to Perform Meaningful Work in Nonsheltered Vocational Environments

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This chapter is dedicated to Marc Gold, 1939-1982, who spent a substantial portion of his remarkably productive life demonstrating that severely handicapped persons could reach heights never dreamed of by most of us. His ideas, his inspiration, and his personal force are clearly imbedded in the hopes expressed here. If disabled persons are helped in any way as a result of this effort, it will be but another small tribute to this wonderful man.

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ABSTRACT

The contents of this chapter are predicated upon three major biases that represent substantial departures from traditional conceptualizations and practices. First, the overwhelming majority of severely handicapped persons are capable of performing meaningful work in nonsheltered vocational environments. Second, nonsheltered vocational environments are inherently less restrictive, more conducive to the performance of meaningful work, more educationally and developmentally defensible, and more cost efficient than sheltered vocational environments. Third, public schools and adult service agencies can and must operate in such ways as to maximize the probability that severely handicapped persons function in nonsheltered vocational environments from early adolescence throughout adulthood.[2]

[2]The label "severely handicapped" refers to approximately the lowest intellectually functioning 1% of the school age population. This 1% range includes students who also have been ascribed such labels as psychotic, autistic, moderately/severely/profoundly retarded, trainable level retarded, physically handicapped, multi-handicapped, and deaf/blind. Certainly, a student can be ascribed one or more of the labels delineated immediately above and still not be referred to as severely handicapped for purposes here, as he/she may not be currently functioning intellectually within the lowest 1% of a particular age.

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INTRODUCTION

If 100 of the most ingenious, creative, intelligent, competent, efficient, and productive people in the world were placed in one room, many fascinating outcomes would be realized and many wonderful emotional and intellectual experiences would be had, but only for a short time. Soon, all would realize that there are events to be experienced and options to be explored, but not in that room. Most, if not all, would then choose to go elsewhere.

In the past, it was believed that severely intellectually disabled persons should function in large multipurpose especially designed environments. As a result, virtually every state in our nation operates "institutions for the retarded." This great service delivery model experiment has now been judged as a tragic, costly, and inhumane failure by almost all. The institutionalization era has passed and noninstitutionalization and deinstitutionalization policies and practices now proliferate.

For decades it was assumed that if severely intellectually disabled persons were to benefit from educational services, they must attend "handicapped schools." Many, however, have now concluded that segregated schools are ideologically unsound, educationally counterproductive, and ridiculously cost inefficient. Each year more and more severely handicapped students attend chronological age appropriate regular schools that are close to their homes.

When nonhandicapped persons complete high school or college,

they have a reasonable array of environments in which they can choose to function vocationally. Indeed, it would be considered blatantly unconstitutional to require that because an I.Q. score is 110 a person can work only in a particular place. In contrast, a severely handicapped adult rarely functions in a work environment because she chooses to be there, because it is designed specifically for her unique vocational needs and interests, or because it is there that she can be most productive. The general rule is that if you are ascribed an I.Q. score of less than 55, or the label severely handicapped, you must function in a segregated; i.e., handicapped only "day program" or stay at home (Bellamy, Sowers, & Bourbeau, 1983; Gold & Pomerantz, 1978). Consequently, almost all severely handicapped adults are denied access to competitive enterprise and the relatively high cost of lifelong sheltered maintenance has generated many pervasive negative attitudes and actions.

Of the many theses offered to justify sheltered vocational environments, five seem particularly relevant:

> Severely handicapped persons can function best or only in sheltered environments;
>
> Sheltered facilities will always be needed because of parental and societal expectations, severe medical and behavioral problems, the absence of acceptable alternatives, and the need for back-up environments for nonsheltered failures;
>
> Most people do not want to see or be near severely handicapped adults who are functioning vocationally in nonsheltered environments;

Millions of tax dollars have been spent on special facilities and taxpayers will be irate if they are not used; and

If sheltered facilities are closed, many nonhandicapped persons will lose their jobs.

Unfortunately, these and similar theses are usually converted into policies and actions that waste money, limit habilitation, deny opportunities, and impede or prevent the development of better alternatives.

The room, the ward, the center, the workshop that can allow the reasonable vocational habilitation of more than but a few severely handicapped persons at one time does not exist. Thus, no longer can the placement of large numbers of severely handicapped persons in one environment be tolerated. If individually meaningful vocational habilitation is to be even approximated, many environments must be explored and complementary matches between the demands of an environment and the unique characteristics of an individual must be generated.

The primary purpose of this chapter is to address factors related to contributions public school systems can make to the vocational habilitation of severely handicapped students. The a priori assumption is that sufficient data are available to support the contention that sheltered vocational environments are inherently restrictive, cost inefficient, nonproductive, and thus not nearly as tenable as other realizable options. Therefore, public school programs that are oriented toward the less dangerous

outcome of preparing for functioning in nonsheltered vocational environments at graduation must be designed and implemented (Donnellan, in press).

A FUNCTIONAL DEFINITION OF MEANINGFUL WORK

Some argue that there will always be a proportion of our citizenry who, for intellectual, behavioral, physical, or other reasons, are not capable of learning to perform work skills or who have life sustaining needs that transcend working. Perhaps. However, in the past, when it was assumed that those assigned to certain levels, groups, or categories could not work, unfortunate errors were made in far too many individual instances. Thus, because of an overexclusion mentality, many capable persons were denied access to meaningful and productive vocational experiences.

It has been repeatedly demonstrated that many severely handicapped persons can be taught to perform a wide variety of work skills once considered beyond their capabilities. The skills necessary to assemble television rectifier units (Huddle, 1967), to operate drill presses (Crosson, 1969), to assemble 24-piece bicycle brakes (Gold, 1972, 1974), and to assemble cam switch actuators (Bellamy, Peterson, & Close, 1975) are but a few examples. More recently, curricular strategies involving ecological inventories, discrepancy analyses, and individualized adaptations have

been utilized to engender the skills necessary for severely handicapped adults to function as chambermaids, buspersons, clerical workers, and custodians (Pumpian et al., 1980).

Fortunately, it is now realized that in most instances it is extremely precarious to predict who can and who cannot learn to perform meaningful work; that determining who is capable of learning to work requires the individualized and systematic application of a variety of affirmative ideological, conceptual, and empirical processes; and that if the performance of meaningful work is established as a major longitudinal educational priority, many severely handicapped students can become substantially more productive than their predecessors. Thus, if we are to make an error, it should be on the side of over rather than under inclusion in meaningful vocational training programs.

Meaningful work refers to a series of actions that, if not performed by a severely handicapped person, must be performed by a nonhandicapped person for money. Assume that a severely handicapped student is asked to put a nut on a bolt, assemble a bicycle brake, assemble an electronic circuit board, package and unpackage pink fuzz, sort colored pipe cleaners, and make piles of popsicle sticks, but does not. If it is now necessary to pay a nonhandicapped person to perform those actions, by definition they can be considered meaningful work. If not, they can be called simulated work tasks, prerequisite work skills, work atti-

tude builders, artificial work, putting a nut on a bolt, etc., but by definition they cannot be called meaningful work.

Meaningful work is usually performed in two kinds of environments: sheltered and nonsheltered. Sheltered vocational environments are those in which most or all workers are handicapped; e.g., sheltered workshops and activity centers. Nonsheltered vocational environments are those in which almost all workers are nonhandicapped. For a vocational environment to be considered nonsheltered, the number of severely handicapped persons should be a reasonable approximation of the number of severely handicapped persons in the general population; i.e., approximately 1%. Justifiable exceptions to this definition of a nonsheltered vocational environment might include a small business that employs seven or eight people, two of whom are severely handicapped.

THE 1971-1978 FOLLOW-UP STUDY

Madison Metropolitan School District and University of Wisconsin personnel examined the life spaces of 53 severely handicapped students who graduated from 1971-1978 (VanDeventer et al., 1981) and determined that:

> Of the 53 graduates, only 1 worked in a nonsheltered vocational environment. Of the 52 others, 49 functioned in

sheltered workshops and activity centers and 3 had no employment or day program, though 1 was on a waiting list to be reinstated at a sheltered workshop (See Table 1).

Almost all those who functioned in sheltered vocational environments were grossly underachieving socially, vocationally, and economically; and

Almost all of those who functioned in sheltered vocational environments were taught many skills as part of their school programs that they were not allowed, encouraged, or required to perform. Using public buses, communicating with nonhandicapped persons, making purchases in community stores, and acting appropriately during work breaks were but a few examples.

Unfortunately, the VanDeventer et al. (1981) findings are not dramatically informative to those who have been close observers of the life spaces of severely handicapped adults, in that most are maintained in cost inefficient and relatively nonproductive sheltered environments (Greenleigh Associates, Inc., 1975; U.S. Department of Labor, 1977, 1979; Whitehead, 1979b).

THE NATURAL PROPORTION

After too many years of underachievement and wasted lives and dollars, it is abundantly clear that handicapped only environments, including institutions for the retarded, segregated schools, sheltered workshops, and activity centers, are particularly inappropriate for severely intellectually handicapped persons. Why, after investing millions of dollars, after usurping the talents of some of the brightest and most dedicated people in

Table 1

Fifty-Three Severely Handicapped Graduates of the Madison Metropolitan School District from 1971-1978 and Where They Functioned During the Work Day as of December 1981

YEAR	NUMBER OF GRADUATES	HOME	SHELTERED ENVIRONMENT	NONSHELTERED ENVIRONMENT
1971	2	0	2	0
1972	5	0	5	0
1973	7	0	7	0
1974	8	1	7	0
1975	9	1	8	0
1976	10	1	9	0
1977	10	0	9	1
1978	2	0	2	0
TOTAL	53	3	49	1

a variety of professional disciplines, and after undergoing decades of revisions, have these homogeneous service delivery models failed? Rational and empirical responses to such an enormously complex question are no doubt legion. The response emphasized here is that homogeneous services grossly violate the Natural Proportion and thus were and are de facto doomed to fail. The Natural Proportion refers to the definitional fact that approximately 1% of our population at any chronological age can be referred to as severely intellectually handicapped (Brown et al., 1983). Further, environments that substantially violate the natural proportion, i.e., environments in which more than 1% of the population consists of severely handicapped persons, are inherently dangerous. However well intentioned, well funded, and well staffed these environments may be, too many of those who are supposed to benefit are actually prevented from achieving anywhere near the levels realizable in environments that are naturally proportioned.

THE RESTRICTIVE NATURE OF SHELTERED VOCATIONAL ENVIRONMENTS

Sheltered environments are not the most habilitative, the least restrictive, the most cost-efficient, or the most individually tenable work places for most, if not all, severely

handicapped adults. Further, given reasonable preparatory experiences, nonsheltered functioning is a practical and realizable alternative. Nine of the many reasons why sheltered are considered less acceptable than nonsheltered vocational environments are that:

Economic survival activities transcend external placement efforts;

Work related skills are rarely required or developed;

Instruction is not emphasized;

The performance of nonmeaningful work is often required;

Work and play are often fused;

Opportunities to benefit from interactions with nonhandicapped workers are not available;

Few meaningful reasons to achieve are operative;

Deviant actions are tolerated; and

Waiting lists, rejections, exclusions, and reduced schedules abound.

Economic Survival Activities Transcend External Placement Efforts

Activities related to the economic survival of a sheltered environment often conflict with the placement of workers elsewhere (Lynch, 1979; Wehman, Hill, & Koehler, 1979; Wehman & McLaughlin, 1980; Whitehead, 1979a). For example, in order to maintain a sheltered environment:

Staff members are assigned to supervise production rather than to secure work in nonsheltered environments;

Workers are asked to perform jobs even though they may not be representative of the types of jobs available in nonsheltered environments;

Workers remain because the facility is dependent upon their productivity to generate operating income; and

As staff members must spend most of their working hours in sheltered environments they become increasingly "out-of-touch" with the work and work related requirements of nonsheltered environments.

Consequently, arbitrary and often capricious prerequisites for access into training programs that have a nonsheltered orientation are often set (Gold, 1973; Stodden, Casale,& Schwartz, 1977). Furthermore, the work performed is often limited to "sit down" assembly and packaging tasks in order to minimize the equipment and personnel costs that might be incurred if a greater variety of jobs was available (Pomerantz & Marholin, 1977; U.S. Department of Labor, 1977, 1979). While many sheltered environment personnel proclaim the intention of preparing clients to function in nonsheltered environments, less than 12% of all who are placed in sheltered facilities ever move to nonsheltered environments and severely handicapped persons represent only a small fraction of that 12% (Greenleigh Associates, Inc., 1975; U.S. Department of Labor, 1977; Shiraga, 1983). If a severely handicapped adult is moved from a sheltered workshop, it is almost always to an "activity center" or to some other less demanding sheltered environment (VanDeventer et al., 1981).

Work Related Skills Are Rarely Required or Developed

A normal daily work routine usually involves the utilization of more than just work skills. Getting to and from the work place, maintaining an acceptable appearance, socializing with nonhandicapped co-workers, communicating food preferences in a cafeteria or at a nearby restaurant, and refraining from bothering others are but a few examples. Most severely handicapped workers do not fail in nonsheltered environments primarily because of production capabilities. Failure is usually the result of less than acceptable social/attitudinal skills, transportation skills, etc., (Greenspan & Shoultz, 1981; Rusch, Weithers, Menchetti & Schutz, 1980; Sowers, Thompson, & Connis, 1979; Wehman, 1981) or what Martin, Flexer, and Newbery (1979) have referred to as the lack of a work ethic.

> We continued to find that "our" clients, as well as other clients in workshops, continued to be poor workers. In spite of good job skill training, time on task training and some tangential skill training, such as money handling and money counting, we were plagued with the persistent observation that "these clients don't know what work is all about--they don't know what they are doing here." (p. 137).

In sum, severely handicapped workers in sheltered environments are rarely provided opportunities to perform, develop, or build upon important work related skills in meaningful contexts.

Instruction Is Not Emphasized

The higher the proportion of severely handicapped persons in an environment, the greater the tendency to segregate, to create "levels," and to make decisions about a group rather than about an individual. For example, a common practice of persons who operate environments with a high proportion of disabled persons is to evaluate an individual and then based on some predetermined criteria place her in a homogeneous level or group (Brolin, 1982; Madison Opportunity Center, Inc., 1981). Unfortunately, the criteria used to determine placement are often arbitrary and unrelated to nonsheltered functioning. If she functions acceptably in her assigned level or group, she remains. If not, she is then placed in a less demanding level or group and eventually might be referred to a nonwork activity or a prework group. Rarely is individualized, direct, systematic, and longitudinal instruction provided that is designed to maximize the probability of functioning in reasonable accordance with capability (Gold, 1973; Nisbet, 1983; Sowers et al., 1979; Whitehead, 1979b). Tragically, without this much needed instruction severely handicapped adults are much less productive than they would be otherwise.

Parenthetically, it is extremely dangerous to attach the prefix pre to any phenomenon associated with a severely handicapped person. Prevocational, precommunity, preacademic, prereading

usually mean that a severely handicapped person will never work or live in the community or will never read, write, and compute meaningfully. Parsimoniously, PRE means NEVER.

The Performance of Nonmeaningful Work Is Often Required

Persons familiar with sheltered workshops often report "dry periods" or intervals during which there is not enough meaningful work to occupy all workers (Greenleigh Associates, Inc., 1975; U.S. Department of Labor, 1979; Whitehead, 1979b). It is during these periods that one often observes the performance of "busy work" (Lynch & Gerber, 1977). Folding and unfolding boxes, stuffing and then unstuffing envelopes are but two examples. When meaningful work becomes scarce, the lowest functioning workers in the environment are usually the first to be required to perform nonmeaningful work (Bellamy et al., 1983). Further, the absence of meaningful work often results in "free time." Severely handicapped persons are notorious for using free time to practice or develop self-stimulatory, counterproductive, and socially inappropriate skills. Obviously, severely handicapped persons must function in environments that do not require the performance of nonmeaningful work or allow large intervals of free time.

Work and Play Are Often Fused

Many sheltered work environments have incorporated preacademic, domestic living, and recreation/leisure activities into their services (Bellamy, Sheehan, Horner, & Boles, 1980).

Unfortunately, adults are often interrupted from their production schedules to receive such services. For example, instead of providing recreation/leisure instruction during breaks, lunch periods, evenings, and on weekends, adults are often taken to a bowling class from 9:00 to 9:50 a.m. and to ceramics class from 2:00 to 3:00 p.m. The predictable negative effects on achievement motivation, on the probability of functioning in nonsheltered environments, and on developing an understanding of the nature of real work, are obvious.

Opportunities to Benefit from Interactions with Nonhandicapped Workers Are Not Available

Severely handicapped persons have demonstrated that they can secure information from observing those functioning in their presence (Baumgart, 1981; Egel, Richman, & Koegel, 1981; Guralnick, 1981; Voeltz, 1980b; Wehman, 1981). The absence of nonhandicapped models in sheltered environments renders it virtually impossible to gain much needed information imitatively. Further, handicapped only environments do not allow severely handicapped workers opportunities to learn to respond to the social cues and correction procedures utilized by nonhandicapped persons in the nonsheltered world of work (Falvey, Brown, Lyon, Baumgart & Schroeder, 1980; Rusch & Menchetti, 1981). Concomitantly, nonhandicapped persons functioning in nonsheltered environments are not provided opportunities to learn to work with, to socialize with, and to supervise severely handicapped workers.

Few Meaningful Reasons to Achieve Are Operative

Severely handicapped persons typically do not perform under the incentive systems that are apparently effective for most non-handicapped persons. For example, rarely do severely handicapped persons view work as a means of acquiring the funds necessary to pay for a car, buy a boat, save for retirement, or meet rent or mortgage payments. Nevertheless, they need subjectively meaningful reasons to perform at reasonable criteria over long periods of time. Under what conditions do severely handicapped adults perform efficiently and consistently? Several seem reasonable:

when others in the environment are working productively;

when co-workers and supervisors communicate respect and appreciation for the work performed;

when less than acceptable performance is corrected clearly and consistently; and

when direct instruction that fosters the gradual expansion and accumulation of work skills and attitudes is available.

Unfortunately, these conditions are rarely, if ever, present in sheltered environments (Pomeranz & Marholin, 1977).

Deviant Actions Are Tolerated

When severely handicapped persons are congregated, performance usually becomes increasingly discrepant from that of non-sheltered peers (Bijou, 1966; Wolfensberger, 1980). For example, assume that eight severely handicapped adults were seated around a table putting plastic knives, forks, and spoons into plastic

bags for use at fast food restaurants. One person might say the same word over and over. A second person might interrupt her work routine consistently by looking at her fingers for 25 - 35 seconds at a time; a third person might pick his nose and eat that picked; a fourth person might...; etc. When most of the people at the table are behaving deviantly, it is extremely difficult, if not impossible, for a supervisor to provide all the interventions necessary for acceptable functioning. Unfortunately, many deviant actions must then be tolerated, ignored, unnoticed, or given euphemistic labels (Wehman & Hill, 1982). The probability of learning to function acceptably in nonsheltered environments is minimized with each passing day.

Waiting Lists, Rejections, Exclusions, and Reduced Schedules Abound

Many parents are told that because their young children will be severely handicapped throughout their lives, they will need to attend handicapped only schools until age 21 and a sheltered workshop or another such "day program" that serves only handicapped persons throughout life. For many parents this life plan represents a state of relief in that they can feel comfortable that cradle to grave places and services will be available. However, parents and professionals must now address several hard facts. First, sheltered work environments are quite expensive. Many communities are putting limits on

expenditures and thus on the number of persons who can attend (Bellamy et al., 1983). As rapidly increasing numbers of such environments have waiting lists, those who anticipated that their children would be maintained in a sheltered environment now must find alternatives. The usual alternative is staying at home. This, of course, results in tremendous economic, social, and employment pressures. Second, most sheltered environments reserve the right to try persons out and then judge them unacceptable or acceptable. Parents of children labeled autistic are well aware of the difficulties of trying to induce an adult environment to accommodate to the needs of their children before they are rejected. Third, in some places persons who must function in wheelchairs, who are not toilet trained, or who have pronounced social and communication difficulties are excluded. Fourth, in an attempt to reduce expenses, many sheltered work environments are offering reduced schedules or services. Some places have proposed a reduction in the number of days per week that individuals can attend from five to three. Where would those individuals function the remaining four days of the week? Quite likely they would be confined to their domestic environments.

Waiting lists, rejections, exclusions, and reduced schedules place educators and parents in extremely precarious positions. It is a questionable strategy to lead a parent to

believe that their severely handicapped child will function in a sheltered work environment when, in fact, such an environment might be unavailable. Concomitantly, it is unfair to provide an education without even attempting to provide the training and experiences necessary for functioning in nonsheltered environments. Clearly, it is more responsible to provide the preparatory experiences necessary for nonsheltered functioning and to live with less if absolutely necessary. If a severely handicapped worker cannot function in a nonsheltered environment, he can move to a more sheltered environment more readily because fewer skills are needed. On the other hand, the inverse is not tenable. Training and placement in sheltered work environments systematically minimize the probability of effective functioning in nonsheltered environments (Moss, 1979; Shiraga, 1983; U.S. Department of Labor, 1977).

In view of the information presented above, at least the following questions seem in order:

> How much longer should school systems prepare their severely handicapped students to function in sheltered vocational environments when data are available that can be interpreted as supporting the notion that such environments are inherently restrictive and cost ineffective?
>
> Can educational curricula be designed and implemented that can prepare severely handicapped students to function acceptably in a wide variety of nonsheltered vocational environments?

> Can school personnel, adult service agencies, and parents/guardians develop cooperative arrangements in order to facilitate habilitative and efficient transitions from school to postschool nonsheltered vocational environments?

The responses offered here are that public schools should no longer prepare severely handicapped students to function in sheltered vocational environments; that longitudinal and comprehensive educational curricula that prepare for functioning effectively in a wide variety of nonsheltered vocational environments can and must be generated; and that personnel representing such disciplines as education, and physical, occupational, and communication therapy, along with members of the business community, adult service providers, and parents/guardians must design and implement a variety of strategies that can be used to transition, i.e., to move, a severely handicapped person from school to habilitative postschool nonsheltered vocational environments (Brown et al., 1981).

THE 1979-1983 FOLLOW-UP STUDY

An examination by Shiraga (1983) of the 50 severely handicapped graduates of the Madison Metropolitan School District from 1979-1983 who were residents of Dane County yielded information about their postschool vocational environments that was remarkably different than that determined by VanDeventer et al. (1981) when

the 1971-1978 graduates were examined.[3] As of August, 1983:

> Of the 50 graduates, 36 functioned in nonsheltered vocational environments, 10 functioned in sheltered environments, and 4 stayed at home all day (see Table 2);
>
> Those who functioned in nonsheltered vocational environments maintained and expanded upon the meaningful work and work related skills acquired during their school years. In addition, numerous opportunitites for interactions with nonhandicapped persons were available within their work environments; and
>
> The 34 graduates who functioned in nonsheltered environments prior to graduation were still in those or other nonsheltered environments.

The number of graduates who functioned in nonsheltered vocational environments from 1971-1983 is communicated graphically in Figure 1. From 1971-1983 there was a significant shift from sheltered to nonsheltered functioning. From 1971-1976 not one graduate functioned in a nonsheltered vocational environment.

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[3]Madison is located in Dane County, Wisconsin. In addition to serving severely handicapped city residents, the Madison Metropolitan School District also serves a number of severely handicapped students who are residents of Dane County, but not the city of Madison. The 50 severely handicapped graduates from 1979-1983 reported here included 3 students who were Dane County but not Madison residents at the time of graduation. The school district also serves a number of severely handicapped students who live at Central Wisconsin Center for the Developmentally Disabled, a state operated "institution." However, as only a few who reside there are from Madison or Dane County, they remain the responsibility of the State of Wisconsin after age 21. Tragically, because the adult service agencies in Dane County are only authorized to serve Dane County residents, most spend their adulthood on the wards of the institution. Four of the 1979-1983 graduates lived at Central Wisconsin Center and were also residents of Dane County. These 4 individuals were included in the 50 graduates examined.

Table 2

Fifty Severely Handicapped Graduates of the Madison Metropolitan School District from 1979 - 1983 and Where They Functioned During the Work Day as of August, 1983

YEAR	NUMBER OF GRADUATES	HOME	SHELTERED ENVIRONMENT	NONSHELTERED ENVIRONMENT
1979	5	1	3	1
1980	9	1	2	6
1981	13	0	3	10
1982	11	0	1	10
1983	12	2	1	9
TOTALS	50	4	10	36

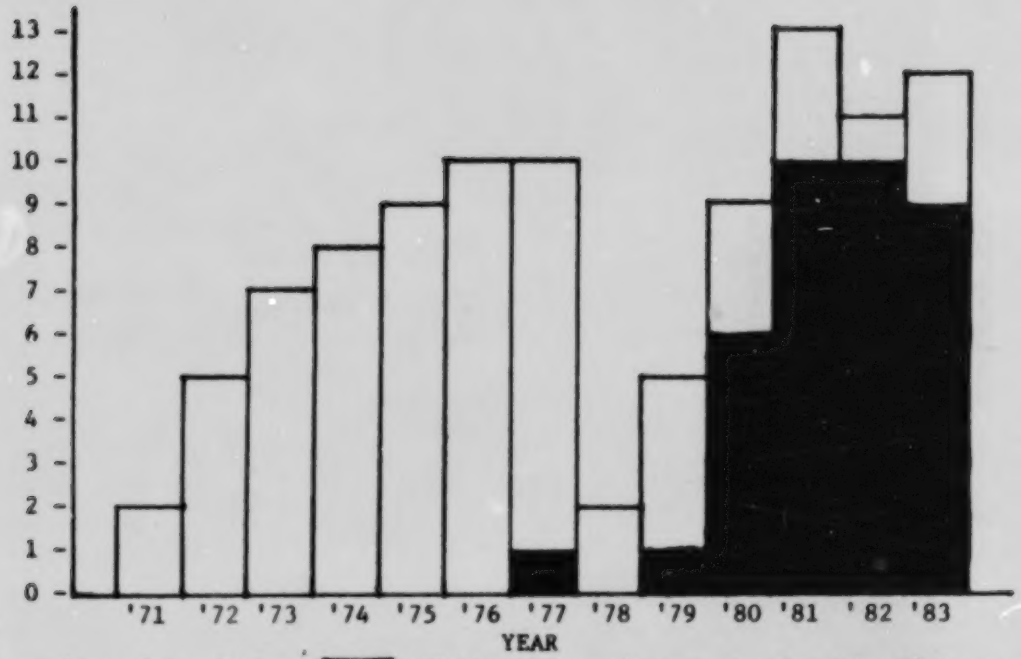

Figure 1. Number of 1971-1983 severely handicapped graduates of the Madison Metropolitan School District who functioned in nonsheltered environments compared to the total number of graduates.[4]

[4]Totals for the 1971-1978 graduates were obtained from VanDeventer et al., 1981. Totals for the 1979-1983 graduates were obtained from Shiraga, 1983.

However, 29 out of 36 or 81% of the 1981-1983 graduates functioned in nonsheltered vocational environments. Although the reasons for these pronounced shifts are numerous, complex, and interactive, five appear to be of particular relevance:

The earlier graduates received their educational and related services primarily in a segregated school. The more recent graduates attended regular public schools;

In the mid-1970's a number of significant changes in the vocational training of severely handicapped students in the Madison Metropolitan School District were initiated. Specifically, students started to receive direct instruction designed to prepare for functioning in nonsheltered vocational environments as adults;

Vocational services designed to assist handicapped adults to function in nonsheltered vocational environments were developed; and

A variety of work-pay relationships that allowed the performance of meaningful work in nonsheltered environments was developed; and

Transition strategies designed to improve communication and coordination between school and postschool service personnel were designed and implemented.

More specific information pertaining to each of the 50, 1979-1983 graduates and the vocational environments in which they functioned as of August, 1983, is presented in Table 3. In an attempt to summarize some of the information in Table 3, the following statements seem reasonable.

Table 1

Information Related to the Vocational Functioning of the 50 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1983 as of August 1983

A	B	C		D		E	F	G	H	I		J	K	L	M
GRADUATE (G) YEAR AND IQ SCORE (IQ)	PRIMARY DISABILITY	EMPLOYMENT: [1] SHELTERED	[2] NONSHELTERED	PERSONS IN EMPLOYMENT: [1] HANDICAPPED WORKERS	[2] NONHANDICAPPED WORKERS AND OTHERS	ACTIVITIES	DAYS/ WEEK	HOURS/ DAY	TYPE AND AMOUNT OF PAYMENT	SUPERVISION: [1] SOURCE	[2] LEVEL	TIME ON JOB	PREVIOUS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
G1 - 1979 IQ = 42	Moderate MR	MARC[5]		116	0	Making ceramic items	5	6	Piece rate, $17/month	MARC	7	6/79-6/83, 30 months		Provided by MARC	Group home
G2 - 1979 IQ = 53	Moderate MR	MDC		190	0	Packaging drapery hooks	5	6	Piece rate, $41/month	MDC	7	6/79-6/83, 30 months		Provided by MDC	Group home
G3 - 1979 IQ = 46	Moderate MR	MDC		190	0	Packaging drapery hooks	5	6	Piece rate, $42/month	MDC	7	6/79-6/83, 30 months		Provided by MDC	Group home
G4 - 1979 IQ = 48	Moderate MR	home of biological parent		Not applicable (NA)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	Natural home
G5 - 1979 IQ = no record	Moderate MR, Unintelligible speech		Rocky Rococo's Pizza (Store #2)	1	55	Cleaning the restaurant, busing tables, and washing dishes	5	2	$3.35/hour, $144/month	VRA	3	6/83-6/83, 14 months	MARC - 6/79-6/82, 36 months. Group home permanently dismantled with sheltered placement. Referred to VRA for non-sheltered placement	Public bus	Group home
			Oak Knoll Station	4	35	Preparing a variety of material for mailing	3	3½	Disability benefits	VRA	3				
G6 - 1980 IQ = no record	Moderate MR, Deaf-blindness		WI Department of Natural Resources	1	45	Collating, labeling and sorting mail	5	3½	Disability benefits	Employer Only	1	1/81-6/83, 31 months	University of WI Hospitals and Clinics-1/80-1/81,12 months, forced to move. Similar work by VRA	Public Bus and handicapped services	Foster home
G7 - 1980 IQ = 47	Moderate MR		National Presto Inc.	1	5	Silk screening and packaging T-shirts and other items	5	3	$3.35/hour, $716/month	VRA	3	12/82-6/83, 8 months		Public bus	Natural home
			Washington Hut Restaurant	1	75	Busing tables	5	2½	$3.35/hour, $180/month	VRA	7	10/75-8/83, 44 months			
G8 - 1980 IQ = 38	Severe MR	Pathways		36	0	Learning self-help and leisure skills	5	6	None	Pathways	7	9/80-6/83, 33 months		Provided by Pathways	Natural home
G9 - 1980 IQ = 37	Severe MR		Oakwood Nursing Home	1	35	Washing dishes and cleaning kitchen and storerooms	5	6	$3.50/hour, $333/month	Employer Only	1	1/80-6/83, 43 months		Public bus	Foster home
G10 - 1980 IQ = 21	Severe MR, Unintelligible speech	MARC		116	0	Learning self-help and leisure skills	5	6	None	MARC	7	6/80-6/83, 30 months		Provided by MARC	Group home
G11 - 1980 IQ = Reported within the severe range	Severe MR, Unintelligible speech		Rocky Rococo's Pizza (Store #2)	1	40	Cleaning the restaurant	5	2	$3.35/hour, $288/month	VRA	3	6/80-6/83, 30 months		Public bus	Group home
			St. Mary's Hospital Pharmacy	1	150	Labeling hospital supplies	5	2½	Disability benefits	VRA	3	1/83-6/83, 6 months	[illegible]		
G12 - 1980 IQ = Reported to be untestable	Severe MR, Non-ambulatory	home of biological grandparents		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Pathways-10/80-7/81, 9 months. Terminated due to behavior problems	N/A	Grandparent's home

[5] A brief glossary is included on page 34

[6] Level of Supervision:

1. Supervision totally provided by the employer and/or other nonhandicapped coworkers in the work environment;
2. On site supervision provided biweekly;
3. On site supervision provided once per week;
4. On site supervision provided twice per week;
5. On site supervision provided a minimum of once per day;
6. On site supervision provided the entire time that graduate is in the environment; and
7. Supervision totally provided by persons that are employed specifically for this purpose.

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Table 1

Information Related to the Vocational Functioning of the 50 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1983 as of August 1983

A	B	C		D		E	F	G	H	I		J	K	L	M
GRADUATE (G) YEAR AND MR SCORE (IQ)	PRIMARY DISABILITIES	EMPLOYMENT: CI CONDITIONS	EMPLOYMENT: CI SUPERVISION	PROGRAMS IN EMPLOYMENT: II HANDICAPPED WORKERS	PROGRAMS IN EMPLOYMENT: II HANDICAPPED WORKERS AND OTHERS	ACTIVITIES	HRS/WEEK	WEEKS/DAY	TYPE AND AMOUNT OF PAYMENT	PAYMENT SOURCE: II SOURCE	PAYMENT SOURCE: II LEVEL	TIME ON JOB	PREVIOUS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
G13 - 1980 IQ - Reported within the severe range	Severe MR, Visually Impaired		University of WI Extension Conference Center-Registrar's Dept.	4	80	Preparing a variety of material for mailing and assembling information packages	5	3	Disability benefits	VRA	4	6/82-6/83, 14 months		Public elderly and handicapped service	Group home
			UWA Radio Station	4	35	Preparing a variety of material for mailing	5	2½	Disability benefits	VRA	4	6/82-6/83, 14 months			
G14 - 1980 IQ = 42	Moderate MR, Unintelligible speech		University of WI Hospital and Clinics Decontamination Dept.	2	200	Dispensing waste materials	5	4	$3.36/hour, $327/month	VRA	2	1/80-6/83, 43 months		Public bus	Natural home
			Forest Products Research Laboratory	2	40	Cleaning conference rooms and maintaining grounds	5	3	Disability benefits	Employer Only	1	5/80-6/83, 39 months			
G15 - 1981 IQ = 31	Severe MR, Unintelligible speech		Burger King Restaurant	1	100	Busing tables, washing dishes, and filling condiments	5	2½	$2.05/hour, $110/month	VRA	3	10/80-6/83, 34 months		Public bus	Natural home
G16 - 1981 IQ = 25	Severe MR, Nonverbal		Madison General Hospital-Central Supply Dept. and Pharmacy	4	175	Folding laundry and labeling, counting and packaging pharmaceuticals	5	4	Disability benefits	VRA	3	6/81-6/83, 26 months		Public elderly and handicapped service	Group home
G17 - 1981 IQ = no record	Severe MR, Unintelligible speech	Pathways		36	0	Learning self-help and leisure skills	5	6	None		Pathways	6/83-8/83, 12 months	MADC - 6/81-6/83, 14 months. Terminated due to behavior problems	Provided by Pathways	Foster home
G18 - 1981 IQ = 54	Moderate MR		Madison Fire Station #1	1	40		5	5	Disability benefits	VRA	4	5/83-6/83, 3 months	Washington Hunt Restaurant - 10/80-12/81, 14 months. Fired for poor quality work and poor work attitude	Public bus	Group home
													Entertainment Restaurant - 12-81/7/82, 7 months. Fired for stealing - University of WI Hospital and Clinics - 9/82-3/83, 6 months. Fired for poor quality work and poor work attitude		
G19 - 1981 IQ = 38	Severe MR, Nonverbal, Hearing Impaired		Madison General Hospital-Pharmacy	4	175	Sorting pharmacy orders [illegible] number [illegible] labeling [illegible]	5	5	Disability benefits	VRA	3	1/81-6/83, 31 months		Public bus	Natural home
			Madison Civic Center	3	50	Preparing a variety of material for mailing and distributing programs at events	3	2	Disability benefits	VRA	3	1/81-6/83, 31 months			
G20 - 1981 IQ = 41	Moderate MR		Rocky Rocco's Pizza (Store #3)	1	45	Cleaning the restaurant and making pizzas	5	3½	$3.35/hour $180/month	VRA	4	2/83-6/83, 4 months	The [illegible] Restaurant - 1/80-1/81, 12 months. Fired for poor quality work.	Public bus	Natural home

[5] A brief glossary is included on page 34

[6] Level of Supervision:

1. Supervision totally provided by the employer and/or other nonhandicapped coworkers in the work environment;
2. On site supervision provided bimonthly;
3. On site supervision provided once per week;
4. On site supervision provided twice per week;
5. On site supervision provided a minimum of once per day;
6. On site supervision provided the entire time that graduate is in the environment; and
7. Supervision totally provided by persons that are employed specifically for this purpose.

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Table 3

Information Related to the Vocational Functioning of the 50 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1982 as of August 1983

A	B	C		D		E	F	G	H	I		J	K	L	M
GRADUATE (#) YEAR AND IQ SCORE (IQ)	PRIMARY DISABILITIES	EMPLOYMENT [1] SHELTERED	EMPLOYMENT [2] NONSHELTERED	PLACED IN EMPLOYMENT [1] NON-CAPPED WORKERS	PLACED IN EMPLOYMENT [2] HANDICAPPED-CAPPED WORKERS AND OTHERS	ACTIVITIES	RATE/ WEEK	HOURS/ DAY	TYPE AND AMOUNT OF PAYMENT	SUPERVISION [1] SOURCE	SUPERVISION [2] LEVEL	TIME ON JOB	PREVIOUS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
G21 - 1981 IQ = 61	Moderate MR		Inn on the Park Hotel	1	35	Cleaning hotel rooms	5	4	$1.70/room, (3 rooms), $110/month	VRA	4	9/80-8/83, 35 months		Public bus	Foster home
			Madison Civic Center	1	34	Preparing a variety of material for mailing and distributing programs of events	2	3	Disability benefits	VRA	3	10/80-8/83, 34 months			
G22 - 1981 IQ = 34	Severe MR, Seizure disorder		University of WI Extension Conference Center-Registrar's Dept.	4	80	Preparing a variety of material for mailing and assembling information notebooks	5	3	Disability benefits	VRA	4	6/82-8/83, 14 months	Madison General Hospital 1/81-6/82, 18 months. Moved to a job that was better suited to capabilities by VRA supervisor	Public elderly and handicapped service	Natural home
G23 - 1981 IQ = 40	Severe MR, Autism		Madison General Hospital-Pharmacy	4	175	Labeling, opening and packaging pharmaceuticals	5	6	Disability benefits	VRA	4	6/81-8/83, 26 months		Public elderly and handicapped service	Natural home
G24 - 1981 IQ = 45	Moderate MR, Seizure Disorder		Rocky Rococo's Pizza (Store #3)	2	40	Cleaning the restaurant	6	2	$1.90/hour, $90/month	VRA	3	2/70-8/83, 46 months		Public bus	Supervised apartment
			St. Mary's Hospital-Pharmacy	1	150	Labeling hospital supplies	7	35	Disability benefits	VRA	3	2/83-8/83, 5 months	University of WI Hospital and Clinics-2/80-1/81, 15 months. Job being performed was placed out		
G25 - 1981 IQ = 45	Moderate MR		Rocky Rococo's Pizza (Store #4)	2	130	Cleaning the restaurant, busing tables, and washing dishes	5	3	$3.35/hour, $216/month	Goodwill	3	9/82-8/83, 11 months	Howard Johnson's Hotel 9/79-8/82, 47 months. Fired for stealing	Public bus	Orchard Hill
			Madison Civic Center	1	30	Preparing a variety of material for mailing and distributing programs of events	2	3	Disability benefits	VRA	3	10/80-8/83, 34 months			
G26 - 1981 IQ = Reported within the severe range	Severe MR	CMC Workshop Program		40	0	Assembling Drapery Pulleys	3	6	None	CMC	7	6/81-8/83, 26 months		Provided by CMC	
G27 - 1981 IQ = 55	Mild MR, Neurological story, Blind	MBC		190	0	Assembling Drapery Pulleys	3	6	Piece Rate, $9/month	MBC	7	1/82-8/83, 19 months		Provided by MBC	Group home
G29 - 1982 IQ = 68	Moderate MR, Blind		University of WI Extension Conference Center-Registrar's Dept.	4	80	Preparing a variety of material for mailing and assembling information notebooks	5	3	Disability benefits	VRA	4	6/82-8/83, 14 months		Public elderly and handicapped service	Foster home
			Veterans Office Building-Payroll Dept.	1	150	Preparing a variety of material for mailing, collating materials and disposing of old forms	5	1 1/2	Disability benefits	VRA	4	3/82-8/83, 17 months			

[3] A brief glossary is included on page 36

[4] Level of Supervision:

1. Supervision totally provided by the employer and/or other nonhandicapped coworkers in the work environment;
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3. On site supervision provided once per week;
4. On site supervision provided twice per week;
5. On site supervision provided a minimum of once per day;
6. On site supervision provided the entire time that graduate is in the environment; and
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Table 3

Information Related to the Vocational Functioning of the 30 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1983 as of August 1983

A	B	C		D		E	F	G	H	I		J	K	L	M
DIAGNOSIS (S) YEAR AND IQ SCORE (IQ)	PRIMARY DISABILITIES	EMPLOYMENT (1) CONSIDERED	EMPLOYMENT (2) ESTABLISHED	PROGRAM OF EMPLOYMENT IA HANDICAPPED WORKERS	PROGRAM OF EMPLOYMENT IB NONHANDICAPPED HANDICAPPED WORKERS AND OTHERS	ACTIVITIES	HOURS/ WEEK	HOURS/ DAY	TYPES AND AMOUNT OF PAYMENT	SUPERVISION I SOURCE	SUPERVISION II LEVEL[6]	TIME ON JOB	PREVIOUS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
229 - 1983 IQ = 42	Moderate MR		Madison General Hospital-Pharmacy	4	173	Sorting pharmacy orders by room number and operating seven machine	5	6	Disability benefits	VRA	5	6/82-8/83, 14 months		Public bus	Group home
230 - 1982 IQ = Reported with the severe range	Severe MR, Nonverbal		University of WI Extension Conference Center-Food Service Dept.	1	88	Setting tables and preparing food	5	3	Disability benefits	VRA	6	6/82-8/83, 14 months		Public elderly and handicapped service	Group home
			Veterans Office Building-Payroll Dept.	3	158	Preparing a variety of material for mailing and stamping and collecting forms	5	3 1/2	Disability benefits	VRA	6	3/82-8/83, 17 months			
231 - 1981 IQ = 50	Moderate MR		Inn on the Park Hotel	2	35	Cleaning hotel rooms	5	6	$1.70/room, (5 rooms), $162/week	VRA	3	9/81-8/83, 24 months		Public bus	Group home
			Diocesan Resource Capital	3	38	Collating remote and assembly kits and preparing a variety of material for mailing	1	3	Disability benefits	VRA	3	3/83-8/83, 5 months			
232 - 1982 IQ = 63	Moderate MR		The Flamingo Restaurant	1	10	Cleaning the restaurant	3	3	$3.35/hour, $126/week	VRA	6	9/81-8/83, 23 months		Public bus	Group home
			Veterans Office Building-Mail Room and Registrar's Office	1	150	Picking up and sorting mail, preparing diplomas, preparing a variety of material for mailing, and stamping forms	5	3 1/2	Disability benefits	VRA	5	1/81-8/83, 19 months			
233 - 1983 IQ = Reported with the severe range	Severe MR, Cerebral palsy, Non-ambulatory, Nonverbal		WHA Radio Station	4	55	Preparing a variety of material for mailing	2	3 1/2	Disability benefits	VRA	6	6/82-8/83, 14 months		Private specialized transportation service	CBC
234 - 1982 IQ = 33	Severe MR, Deaf, Nonverbal		University of WI Engineering Extension	4	83	Preparing a variety of material for mailing, compiling information brochures, and morning	5	3	Disability benefits	VRA	6	10/82-8/83, 10 months		Public elderly and handicapped service	Foster home
235 - 1982 IQ = 62	Mild MR, Cerebral palsy, Non-ambulatory		Group Health Cooperative	2	63	Preparing information packets	2	3	Disability benefits	VRA	5	1/83-8/83, 19 months		Public elderly and handicapped service	Supervised apartment
			University of WI Engineering Extension	4	85	Preparing a variety of material for mailing and compiling information brochure	3	3	Disability benefits	VRA	5	10/82-8/83, 19 months			

[5] A brief glossary is included on page 36

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Table 3

Information Related to the Vocational Functioning of the 50 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1983 as of August 1983

A	B	C		D		E	F	G	H	I		J	K	L	M
		EMPLOYMENT		PERSONS IN ENVIRONMENT						EMPLOYMENTION					
GRADUATE (G) YEAR AND IQ SCORE (IQ)	PRIMARY DISABILITIES	[1] QUALIFIED	[2] NONQUALIFIED	[1] HANDICAPPED WORKERS	[2] NONHANDICAPPED WORKERS AND OTHERS	ACTIVITIES	DAYS/ WEEK	HOURS/ DAY	TYPE AND AMOUNT OF PAYMENT	[1] SOURCE	[2] LEVEL	TIME ON JOB	PREVIOUS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
G79 - 1982 IQ = 37	Severe MR, Cerebral palsy, Deaf, Nonverbal		University of WI Extension Conference Center-Registrar's Dept.	4	80	Preparing a variety of material for mailing and assembling information notebooks	2	3	Disability benefits	VRA	5	6/82-6/83, 14 months		Public bus	Group home
			Camp Randall Memorial Sports Center	1	150	Checking identification cards and distributing towels	3	3	Disability benefits	VRA	3	11/82-6/83, 9 months			
G37 - 1982 IQ = 32	Severe MR, Cerebral palsy, Non-ambulatory		Group Health Cooperative	2	65	Preparing information Packets	2	3	Disability benefits	VRA	5	1/82-6/83, 19 months		Private specialized transportation service	Foster home
			University of WI Engineering Extension	1	85	Preparing a variety of material for mailing and compiling information brochures	3	3	Disability benefits	VRA	3	10/82-6/83, 10 months			
G38 - 1982 IQ = Reported within the severe range	Severe MR, Hearing Impaired, Visually Impaired	Pathways		36	0	Learning self-care and leisure skills	5	6	None	Pathways	7	7/82-6/83, 13 months		Provided by Pathways	CBC
G39 - 1983 IQ = 55	Severe MR, Seizure disorder		American Automobile Association	3	85	Preparing a variety of material for mailing and grouping forms	5	3 1/2	Disability benefits	VRA	6	2/83-6/83, 4 months		Public bus	Group home
			Madison Fire Station #1-Administrative Offices	2	45	Cleaning restrooms, bathrooms, and halls	5	2	Disability benefits	VRA	6	5/83-6/83, 3 months			
G40 - 1983 IQ = 20	Profound MR, Nonverbal		American Automobile Association	3	85	Preparing a variety of material for mailing and grouping forms	5	3 1/2	Disability benefits	VRA	6	5/83-6/83, 3 months		Public elderly and handicapped service	Group home
			Madison Fire Station #1-Administrative Offices	2	45	Cleaning restrooms, bathrooms and halls	5	2	Disability benefits	VRA	6	5/83-6/83, 3 months			
G41 - 1983 IQ = Reported within the profound range	Profound MR, Cerebral Palsy, Non-ambulatory, Nonverbal, Seizure disorder	None of biological parent		N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A		N/A	Natural home
G42 - 1983 IQ = 45	Moderate MR		Rocky Rococo's Pizza (Store #6)	2	130	Cleaning restaurant	5	2 1/2	$3.35/hour, $140/week	Goodwill	3	5/83-6/83, 2 months		Public bus	Natural home
			Capitol Center Food Grocery Store	1	110	Cleaning storerooms and straighting aisles and stocking shelves	5	2 1/2	$3.35/hour, $100/week	VRA	3	1/83-6/83, 7 months			

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4. On site supervision provided twice per week;
5. On site supervision provided a minimum of once per day;
6. On site supervision provided the entire time that graduate is in the environment; and
7. Supervision totally provided by persons that are employed specifically for this purpose.

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Table 3

Information Related to the Vocational Functioning of the 50 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1983 as of August 1983

A	B	C	D		E	F	G	H	I		J	K	L	M
GRADUATE (G) YEAR AND IQ SCORE (IQ)	PRIMARY DISABILITY	PLACEMENT: G EMPLOYED	PLACEMENT: G UNEMPLOYED	PLACEMENT: H HANDICAPPED WORKERS AND OTHERS	ACTIVITIES	DAYS/ WEEK	HOURS/ DAY	TYPE AND AMOUNT OF PAYMENT	SUPERVISION: I1 SOURCE	SUPERVISION: I2 LEVEL	TIME ON JOB	POSITIONS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
G63 - 1983 IQ = 35	Severe MR, Muscular dystrophy		American Automobile Association	3	85	Preparing a variety of material for mailing, stamping and retrieving membership members from computer terminal	5	3 1/2	Disability benefits	VRA	6	2/83-6/83, 6 months		Public bus	Foster home
			Madison Fire Station #1-Station House	3	50	Washing vehicles	5	3	Disability benefits	VRA	6	2/83-6/83, 4 months			
G64 - 1983 IQ = 36	Severe MR, Hearing impaired		Rocky Rococo's Pizza (Store #3)	1	40	Cleaning Restaurant	5	1 1/2	$3.35/hour, $100/month	Goodwill	3	1/83-6/83, 7 months		Public bus	Orchard Hill
			Langdon Area Grocery Collective	3	45	Cleaning store and purchasing food items	2	3 1/2	Disability benefits	Goodwill	3	1/83-6/83, 7 months			
			Wisconsin State Capitol	3	50	Collecting remote and assembly bills and preparing a variety of material for mailing	1	3	Disability benefits	VRA	3	3/83-6/83, 3 months			
G65 - 1983 IQ = Reported within the severe range	Severe MR, Nonverbal	Pathways		26	0	Learning self-help and leisure skills	5	6	None	Pathways	7	6/83-6/83, 2 months		Provided by Pathways	CBC
G66 - 1983 IQ = 36	Severe MR		Veterans Administration Hospital-Pharmacy	1	175	Labeling and packaging pharmaceuticals, preparing a variety of material for mailing, and stocking shelves	5	3 1/2	Disability benefits	VRA	3	9/81-6/83, 23 months		Public bus	Supervised apartment
			Langdon Area Grocery Collective	3	45	Stocking shelves and packaging food items	2	3 1/2	Disability benefits	Goodwill	3	10/82-6/83, 10 months			
			Wisconsin State Capitol	3	50	Collecting remote and assembly bills and preparing a variety of material for mailing	1	3	Disability benefits	VRA	3	3/83-6/83, 3 months			
G67 - 1983 IQ = 42	Moderate MR		University of WI Engineering Extension	4	85	Preparing a variety of material for mailing and compiling information brochures	5	3	Disability benefits	VRA	6	7/83-6/83, 1 month		Public bus	Group home
			Madison Fire Station #1-Station House	2	30	Washing vehicles	5	2	Disability benefits	VRA	6	2/83-6/83, 4 months			
G68 - 1983 IQ = 36	Severe MR		University of WI Extension Conference Center-Registrar's Dept.	4	80	Preparing a variety of material for mailing and assembling information notebooks	5	3	Disability benefits	VRA	6	7/83-6/83, 1 month		Public elderly and handicapped service	Foster home
			[illegible]	2	35	[illegible] for mailing	5	3 1/2	Disability benefits	VRA	6	5/83-6/83, 4 months			

[5] A brief glossary is included on page 36

[6] Level of Supervision:

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3. On site supervision provided once per week;
4. On site supervision provided twice per week;
5. On site supervision provided a minimum of once per day;
6. On site supervision provided the entire time that graduate is in the environment; and
7. Supervision totally provided by persons that are employed specifically for this purpose.

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Table 3

Information Related to the Vocational Functioning of the 50 Severely Handicapped Graduates of the Madison Metropolitan School District From 1979-1983 as of August 1983

A	B	C		D		E	F	G	H	I		J	K	L	M
GRADUATE (G) YEAR AND IQ SCORE (IQ)	PRIMARY DISABILITIES	ENVIRONMENT: (1) EMPLOYED	ENVIRONMENT: (2) UNEMPLOYED	PERSONS IN ENVIRONMENT: (1) NONHANDICAPPED WORKERS AND OTHERS	PERSONS IN ENVIRONMENT: (2) HANDICAPPED WORKERS	ACTIVITIES	HRS/WEEK	WORKS/DAY	TYPE AND AMOUNT OF PAYMENT	SUPERVISION: (1) SOURCE	SUPERVISION: (2) LEVEL[1]	TIME ON JOB	PREVIOUS JOB(S) AND REASON(S) FOR LEAVING	TRANSPORTATION	DOMESTIC ENVIRONMENT
G79 - 1983 IQ - 42	Moderate MR		University of WI Hospital and Clinics Materials Sterilization Dept.	1	200	Preparing surgical instruments for sterilization	5	5 1/2	Disability benefits	VRA	3	9/80-6/83, 33 months		Public bus	Natural home
			Nordic Cancer Research Laboratory	1	50	Cleaning and storing laboratory glassware	3	2	$1.80/hour, 384/month	Goodwill	3	10/81-6/83, 22 months			
G50 - 1981 IQ - 36	Severe MR, Visually Impaired	None of biological parent		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A

[1] A brief glossary is included on page 36

[2] Level of Supervision:

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3. On site supervision provided once per week;
4. On site supervision provided twice per week;
5. On site supervision provided a minimum of once per day;
6. On site supervision provided the entire time that graduate is in the environment; and
7. Supervision totally provided by persons that are employed specifically for this purpose.

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The most recent I.Q. scores that were available in school records of 30 of the 36 graduates who functioned in nonsheltered vocational environments ranged from 20 to 62 and averaged 39.5. Of the remaining 6, there were 4 whose records did not contain specific I.Q. scores but did include judgments that intellectual functioning was within the "severe range" and 2 whose records had been destroyed at parent request (Column A);

The most recent I.Q. scores that were available in school records of 6 of the 10 graduates who functioned in sheltered vocational environments ranged from 25 to 55 and averaged 41.5. Of the remaining 4, there were 3 whose records did not contain a specific I.Q. score but did include judgments that intellectual functioning was within the "severe range" and 1 whose records had been destroyed at parent request (Column A);

Of the 4 graduates who stayed at home, 2 were assigned I.Q. scores of 48 and 34 respectively, 1 had records that did not contain a specific I.Q. score but did include judgments that intellectual functioning was within the "profound range," and 1 was reported to be untestable (Column A).

Of the 36 graduates who functioned in nonsheltered environments, 1 was labeled mildly retarded, 16 were labeled moderately retarded, 18 were labeled severely retarded, and 1 was labeled profoundly retarded. In addition, 7 were nonverbal, 4 had speech that was unintelligible, 4 were nonambulatory, 4 had cerebral palsy, 1 was visually impaired, 1 was blind, 2 were auditorily impaired, 2 were deaf, 3 had seizure disorders, and 1 was labeled autistic (Column B);

Of the 10 graduates who functioned in sheltered environments, 1 was labeled mildly retarded, 3 were labeled moderately retarded, and 6 were labeled severely retarded. In addition, 1 was nonverbal, 2 had speech that was unintelligible, 1 was nonambulatory, 1 was blind, and 1 was both auditorily and visually impaired (Column 6).

Of the 50 graduates, 36 functioned in 35 different nonsheltered vocational environments, 10 functioned in 4 sheltered environments and 4 stayed at home all day (Columns C1 and C2). Please note that some graduates functioned in more than one nonsheltered environment;

The 35 nonsheltered vocational environments were in reasonable accordance with the natural proportion, whereas all 4 of the nonsheltered environments grossly violated the natural proportion (Columns D1 and D2). The numbers of handicapped and nonhandicapped persons in each vocational environment are presented in Columns D1 and D2, respectively. Column D2 does not include persons who were employed for the specific purpose of providing services to the handicapped individuals, but does include persons such as customers, students, or visitors;

There were greater varieties and amounts of meaningful work being performed by those functioning in nonsheltered vocational environments than by those functioning in sheltered environments (Column E);

All graduates who functioned in sheltered environments were occupied 5 days a week for an average of 6 hours per day. This time was the total number of hours present in the environment and included time spent engaging in nonvocational activities such as "basic skill building" and "leisure time" classes. All but 2 of the 36 graduates who functioned in nonsheltered environments were also occupied 5 days a week. These graduates worked an average of 4.4 hours per day. This time included only the number of hours spent performing meaningful work. It did not include time spent for lunch or any nonvocational activities that may have been incorporated into their day. For example, drinking coffee with a friend or going to the library after work or, for those who functioned in two different vocational environments, transportation between the two environments (Columns F and G).

The 36 graduates who functioned in nonsheltered environments experienced the range of payment options displayed in Table 4. Seven received subminimum wage, 8 received the typical wage of a nonhandicapped person performing the same work at the same standards, and 21 received indirect pay in the form of noncontingent disability benefits. Included in the 15 who received direct payment in the form

of subminimum or typical wages were 10 who also received indirect payment. Of the 10 graduates who functioned in sheltered environments, 4 were paid on a piece rate basis and 6, because they did not perform meaningful work, did not receive payment. The average monthly wage of those who received direct payment in nonsheltered environments was $191.00. The average monthly wage of those who received direct payment in sheltered environments was $27.00 (Column H);

The 10 graduates who functioned in sheltered environments were supervised by facility staff only. In addition to that provided by the staff of Vocational Education Alternatives, Inc. and Goodwill Industries, much of the supervision of those who functioned in nonsheltered environments was provided by their employers and/or nonhandicapped coworkers (Columns I1 and I2);

The 10 graduates who functioned in sheltered environments had been in those or other sheltered environments since they graduated. Indeed, of the 61 graduates placed in sheltered environments since 1971, only 2 had been replaced to nonsheltered environments. This replacement seems to have resulted from the urgings of group home parents rather than from sheltered facility staff. Of the 34 graduates who functioned in nonsheltered environments prior to graduation, 27 were successfully working in the same environments in which they functioned at graduation; 2 had moved to more demanding nonsheltered environments, 2 were placed in a different nonsheltered environment when their original jobs were phased out; and 3 had been fired. Of the 3 who had been fired, 2 were replaced in other nonsheltered environments of approximately the same level of difficulty and 1 was placed in a nonsheltered environment where more external supervision could be provided. None of the 34 had been moved from nonsheltered to sheltered environments (Columns J and K);

The 10 graduates who functioned in sheltered environments were provided handicapped only transportation services by the facilities. Of the 36 graduates who functioned in nonsheltered environments, 23 utilized the public bus system, 11 utilized the public transportation system designed to meet the needs of elderly and handicapped persons, and 2 were transported by a private specialized transportation service for disabled and elderly persons (Column L); and

Of the 10 graduates who functioned in sheltered environments, 5 lived in group homes, 1 lived in his natural home, 1 lived in a foster home, and 3 lived at Central Wisconsin Center, a state operated institution for the developmentally disabled. Of the 36 who functioned in nonsheltered environments, 13 lived in group homes, 9 lived in their natural homes, 8 lived in foster homes, 1 lived at Central Wisconsin Center, an institution, 2 lived at Orchard Hill, a residential facility that serves 96 retarded adults, and 3 lived in supervised apartments (Column M).

Glossary for Table 3

MARC The Madison Area Association for Retarded Citizens Work Activity Center is a work activity center in Madison, Wisconsin operated by the Madison Area Association for Retarded Citizens that serves approximately 116 developmentally disabled adults.

MOC Madison Opportunity Center is a sheltered workshop in Madison, Wisconsin that serves approximately 270 handicapped adults.

VEA Vocational Education Alternatives, Inc. is an agency in Madison, Wisconsin designed to assist disabled adults to function in nonsheltered vocational environments. At any given time it serves approximately 200 handicapped adults.

CWC Central Wisconsin Center for the Developmentally Disabled is a state institution located in Madison, Wisconsin that houses approximately 700 developmentally disabled citizens.

Orchard Hill is a residential facility in Madison, Wisconsin that serves 96 retarded adults. It consists of eight cottages and a general purpose building. Twelve residents live in each cottage and are supervised by resident houseparents.

Pathways is an activity center in Madison, Wisconsin that serves approximately 25 developmentally disabled adults.

Goodwill Industries is an agency in Madison, Wisconsin that provides vocational services to approximately 110 handicapped adults; approximately 20% of whom receive these services in nonsheltered environments.

THE ENHANCING NATURE OF NONSHELTERED VOCATIONAL ENVIRONMENTS

Those addressing the vocational needs of severely handicapped students are in a dilumma. It is known that most severely handicapped adults function in sheltered environments, but it is apparent that those environments are inherently restrictive. Two major options seem reasonable. First, attempts can be made to improve the nature of sheltered environments (Bellamy, Horner, & Inman, 1979; Redkey, 1979; Whitehead, 1979b). Second, attempts can be made to arrange for nonsheltered functioning. While the negative characteristics ascribed to sheltered could also be operative anywhere, nonsheltered environments by nature offer severely handicapped workers many more opportunities to function adaptively and productively. Thus, the second is offered as the option of choice. Seven, but certainly not all, of the more enhancing characteristics of nonsheltered environments are addressed below:

Job rotation is more feasible;

A continuous flow of meaningful work is available;

There are more opportunities to acquire and perform work related skills;

Transportation services are less costly and more normalized;

The nature of the supervision available is more acceptable;

Access to health services can be available, if necessary; and

The social climate is more conducive to success and personal growth.

Job Rotation Is More Feasible

Many assume that the more intellectually handicapped a person, the more appropriate it is that a particular work task be performed repetitively. Thus it is often recommended that severely handicapped persons be required to perform exactly the same job in exactly the same place over long periods of time. Such is the case in many sheltered vocational environments (Greenleigh Associates, Inc., 1975; U.S. Department of Labor, 1979). This assumption is rarely valid. In fact, nonhandicapped persons seem to be much more capable of performing the same job year after year than are severely handicapped persons; perhaps this is because they have the major responsibilities for mortgage payments, dental bills, car payments, etc. Thus, an important characteristic of a vocational environment for a severely handicapped person is that it must contain opportunities to engage in a variety of different meaningful work tasks daily or weekly. This variety is often available in nonsheltered vocational environments. Pete is a 22-year-old severely handicapped graduate of the Madison Metropolitan School District and works afternoons in a large university office building. He spends the first half of the afternoon collecting outgoing mail from individual offices on four floors within the building. The second half of the afternoon is spent performing a variety of general clerical tasks such as collating paper, labeling and

stuffing envelopes, inserting cards into diploma covers, and validating student identification cards. In the judgment of all concerned, this diversity of work tasks has played a major role in maintaining his interest in his job over several years.

A Continuous Flow of Meaningful Work Is Available

Given free time, many severely handicapped persons engage in obtrusive, self-stimulatory, maladaptive, or otherwise counterproductive actions. In addition, it is extremely important that severely handicapped persons realize that the work they do has value and is respected by nonhandicapped persons. Thus, functioning in environments that have a continuous flow of meaningful work must be arranged. Conversely, environments that tolerate blocks of time during which work is not available or that allow the performance of nonmeaningful work must be avoided. Sheltered environments, of course, are notorious for offering large blocks of time during which meaningful work is unavailable (Greenleigh Associates, Inc., 1975).

There Are More Opportunities to Acquire and Perform Work Related Skills

It is generally more enhancing to function in work environments that allow and require the performance of a variety of work related skills. Severely handicapped persons working in nonsheltered environments can learn to use vending machines, stores, parks, and recreation facilities as natural components of their

work day. Jan is a 24-year-old severely handicapped individual who works each morning as a housekeeper at a downtown hotel and each afternoon as a clerical worker at the Madison Civic Center. During her lunch hour she utilizes a variety of general community and recreation environments such as stores, restaurants, and the public library, all of which are located within short walking distances of her two jobs. Because use of these environments has been incorporated into the overall routine of her work day, she has been able to develop and maintain a variety of life space enhancing work related skills.

Transportation Services Are Less Costly and More Normalized

Direct nonsheltered vocational instruction starts in the Madison Metropolitan School District upon entering middle school at age 11 or 12. Whenever possible, public transportation from school to work environments and back is utilized although the cars of school personnel are used occasionally. At these young ages, environments can be selected for training purposes with minimal regard to the transportation issues that will be salient upon graduation. As chronological age increases, however, issues associated with travel to and from the work place assume increasing importance. At approximately age 18, vocational training sites that students can travel to and from when they graduate are sought and environments that are difficult to access are avoided. That is, as some students can learn to ride specific public buses to and from

designated environments, vocational sites on public bus lines are selected. As others need various kinds of more specialized transportation services, vocational environments accessible to those kinds of services are chosen. Shopping centers and hospitals are often preferred vocational sites because they are on the routes of specialized handicapped and elderly transportation services. For those who cannot use public buses or specialized handicapped and elderly transportation systems, subsidized car pools with nonhandicapped workers are becoming increasingly feasible. Several years ago many nonhandicapped workers would not have considered having a severely handicapped person in their car pool. However, after dramatic changes in attitudes as a function of direct experiences in school (Brown et al., 1983; Voeltz, 1980a) and work places (Pumpian, 1981), heterogeneous car pools are becoming socially realistic and economical transportation options.

Most sheltered vocational environments purchase or contract for a bus or buses to transport only handicapped workers to and from their homes (Sowers et al., 1979). This expenditure includes the salary and benefits of one or more drivers, bus maintenance, fuel, insurance, etc. Few of these expenses are incurred when severely handicapped adults function in nonsheltered environments because they utilize transportation alternatives that are much less costly.

The Nature of The Supervision Available Is More Acceptable

External supervision refers to that provided by persons who are paid specifically for the purpose of providing that service. Clearly, severely handicapped persons will need the direct supervision of adult service professionals throughout their lives. However, the kinds and degrees of professional supervision needed vary across environments and persons. Some individuals in some environments need daily external supervision while others can function quite well with much less. John is a 24-year-old severely handicapped graduate of the Madison Metropolitan School District who has worked as a busperson at a restaurant for almost 4 years. On a daily basis he functions quite well and his adult service agency supervisor merely maintains bimonthly contact with his employer. However, from time to time he has difficulties with grooming and social skills. When these difficulties arise, the external supervisor visits the work and domestic environments on a more frequent basis so as to intervene directly with all concerned until the problems are corrected. Conversely, Donna is 24 years old, has been labeled autistic, and works in the pharmacy of a hospital. When left alone for even short periods of time, she will stray from her work place and self-stimulate in socially obtrusive ways. Because of these persistent difficulties and the degree of sophistication needed to manage them, an external supervisor provides continuous daily monitoring in her work environment.

Internal supervision refers to that provided by nonhandicapped co-workers in nonsheltered vocational environments. If the only supervision available is external in nature, many logistical and economic strains are placed upon adult service agencies. Nonsheltered vocational environments, however, often offer reasonable probabilities that, after acclimation and training, nonhandicapped workers will assume individually appropriate and significant supervisory responsibilities. Karen was trained to perform meaningful work in a cancer research laboratory by public school teachers as a part of her educational program. During her final two school years she attended high school in the mornings and worked at the laboratory for $2.00 per hour for a total of 10 hours per week in the afternoons. Almost all supervision was provided by the nonhandicapped workers who also functioned in the laboratory. External supervision was offered only on an as needed basis.

Access to Health Services Can Be Available, If Necessary

Some severely handicapped students function in continuous states of biological distress. Brittle bones, seizure difficulties, and chronic infections are but a few examples. For these individuals, nonsheltered environments can be selected that are relatively safe, that contain large numbers of reasonably informed and healthy nonhandicapped persons, and that have

reasonable temporal and geographic access to appropriate health facilities and personnel. David is 24 years old and has a long history of severe and frequent grand mal seizures. Thus, his teachers prepared him to work in the central supply department of a local hospital where he was always in the presence of many nonhandicapped workers and had immediate access to health facilities and personnel. He has had several major seizures and his nonhandicapped co-workers have become both accustomed to and adept at dealing with them constructively.

The Social Climate Is More Conducive to Success and Personal Growth

However difficult to define, one of the most important attributes of a nonsheltered vocational environment for a severely handicapped person is its social climate. It is extremely important that severely handicapped persons have opportunities to develop friendships with others who have handicapping conditions as well as with those who do not. In addition, it is very important that they be surrounded by co-workers who model appropriate social and work behaviors, who can provide common sense intervention and assistance when difficulties arise, and who can provide protection in cases of actual or potential harm. These conditions, while not feasible in sheltered environments, are typical in most nonsheltered environments.

FIVE RELATIONSHIPS BETWEEN MEANINGFUL WORK AND PAY

Perhaps in the near future most severely handicapped persons will perform meaningful work in nonsheltered environments for 40 hours per week and will receive payment that is substantially above the minimum wage. Unfortunately, at this time such circumstances seem realizable for only a few. Nevertheless, economically and ideologically feasible strategies that can be used to provide reasonable recompense for meaningful work must be designed and implemented. Five types of relationships between meaningful work and direct and indirect pay are outlined in Table 4. Each will be discussed briefly below. Direct pay refers to the contingent receipt of money for the performance of meaningful work. Indirect pay refers to the noncontingent relationship between the receipt of tax dollars in the form of disability benefits and the performance of meaningful work.

Type A refers to the conditions under which a severely handicapped student performs meaningful work, but does not receive pay. The reason for nonpayment is that the person is in a training program. For example, it was arranged that two severely handicapped students would be taught to perform meaningful work such as unpackaging supplies, cleaning plumbing materials, and cleaning up around the shop and storage room at the Blied Plumbing Company of Madison, Wisconsin. If the owner had been asked at the onset to pay these untrained students, he would not have agreed to the arrangement. In an effort to initiate a

Table 4

Five Relationships Between Meaningful Work and Direct and Indirect Pay

TYPE OF RELATIONSHIP	REASON	NONSHELTERED ENVIRONMENT
A - No Pay	Training	Blied Plumbing Co.
B - Subminimum Wage	Substandard Performance	McArdle Cancer Research Laboratory
C - Typical Wage	Standard Performance	Washington Host Restaurant
D - Indirect Pay (Noncontingent Disability Benefits)	Substandard Performance	Madison General Hospital - Pharmacy
E - Direct Pay and Indirect Pay	To Avoid Benefit Loss and/or a Sheltered Environment	University of Wisconsin Hospital and Clinics (direct pay) and Forest Products Research Laboratory (indirect pay)

relationship, an agreement was established specifying that school personnel would teach the performance of meaningful work at no cost to the company in exchange for the use of the nonsheltered training environment. Obviously, the company realizes economic gains in that if the students did not perform the work, nonhandicapped persons would be paid to do so.

Type B refers to the conditions under which a severely handicapped person performs meaningful work and is paid a subminimum wage. The reason for a subminimum wage is the level of competence manifested; i.e., a student is unable to perform work skills in accordance with the minimal standards expected of a minimum wage employee. Karen works at the McArdle Cancer Research Laboratory on the campus of the University of Wisconsin for 10 hours per week at $2.00 per hour. Most of the work she performs consists of sterilizing and putting away laboratory glassware. If she could perform these skills in accordance with the quantity and quality standards expected of nondisabled workers, she would be paid a minimum wage. Until she can, based on her present level of production, it has been determined by those directly involved and approved by the Wisconsin Department of Industry, Labor, and Human Relations that $2.00 per hour is fair remuneration.

Type C refers to the conditions under which a severely handicapped person performs meaningful work for the same wages as

nondisabled workers. Clearly, there are many severely handicapped individuals who are able to perform in accordance with the standards expected of nondisabled workers who perform the same functions. Jim works as a busperson for 2½ hours per day at the Washington Host Restaurant and receives $3.35 per hour, plus 10% of the tips the waiters and waitresses receive that utilize his busing services. This is the same arrangement available to nondisabled buspersons in this environment.

Type D refers to the conditions under which a severely handicapped person performs meaningful work but receives only indirect payment such as Supplemental Security Income benefits. The basic reason is that while a worker is not sufficiently competent to be paid directly by an employer, she is receiving medical insurance, general living allowances, and other tangible economic benefits because she is disabled. Rather than describing such work as "volunteering" or as a "day program," it seems more accurate and enhancing to refer to it as meaningful work in exchange for the disability benefits received from taxpayers, even though the benefits are not contingently related. Donna is 24 years old, has autism, and is severely intellectually handicapped. She works in the pharmacy of Madison General Hospital where she unpackages supplies and labels and sorts a variety of pharmaceuticals. If she did not perform this work, nondisabled workers would be paid to do so. Donna, however, requires

continuous external supervision and cannot perform at criteria that would allow hospital officials to pay her directly. She could stay at home or function in a much more costly and restrictive sheltered environment and essentially do nothing for the benefits she receives from taxpayers. However, performing meaningful work in a hospital is a more productive, cost efficient, and personally satisfying option.

Type E refers to the conditions under which a severely handicapped person receives direct payment for meaningful work performed in one environment and indirect payment for meaningful work performed in another, during the same work day or week. There are basically two reasons for this relationship. First, there are those who can earn money in an amount that would make them ineligible for disability benefits. However, the amount they can earn is not sufficient to allow them to be responsible for all of their daily living needs and medical expenses. Rather than allowing them to become ineligible for these benefits, to not work at all, or to work in an unnecessarily restrictive sheltered environment, a reasonable alternative seems to be that of of arranging part time work in one environment for direct payment and part time work in another for indirect payment. Second, there are persons who can perform meaningful work in nonsheltered environments, but who are either not needed 8 hours per day or who have difficulty functioning effectively in one environment

for more than 3 or 4 hours. By arranging for them to work in one environment for direct pay for half a day and in another environment for indirect pay for the other half, placement in a sheltered vocational environment can be avoided.

Certainly, these work-pay relationships are not the only possibilities and there is no doubt that as knowledge and experience accrue, and as disability benefit eligibility criteria evolve, more varied and innovative relationships will be realized. Additionally, however distasteful, it must be acknowledged that severely handicapped persons work for many reasons, but money is typically not one of them. If at all possible, quality of life must transcend money. Many of us will agree to earn less if we like our job, the place in which we work, the people with whom we work, and if we sense that what we do is appreciated. Further, exploitation refers to taking something and giving little if anything in return. Most taxpayers will better understand both the need for and the spirit of disability payments if they sense that the recipients are at least trying to give something in return.

Finally, given the present state of the American economy, i.e., economic recession and high unemployment, and the strength of organized labor, it is often asked, how can it be expected that severely handicapped adults be employed in nonsheltered environments. The response offered here is twofold. First, the jobs

that the majority of severely handicapped persons can be taught to perform are primarily nonunion, low wage, and part time in nature. Most severely handicapped persons receive economic subsidies in the forms of medical insurance, and food, shelter, and clothing allowances that are not available to nonhandicapped persons and therefore, can afford to work in such jobs over long periods of time. Consequently, while many of these jobs are not financially viable for nonhandicapped persons, they offer meaningful and enhancing employment opportunities for severely handicapped workers. Second, since it is extremely doubtful at this time that many severely handicapped adults can secure high paying and high status unionized jobs, it seems reasonable to arrange for severely handicapped persons to function in environments in which organized labor will interfere minimally, if at all. Small family businesses such as restaurants and independent groceries, and small franchises such as pizza stores and motels are but a few examples of environments that may not have unions or that have unions which might not impede the vocational functioning of severely handicapped persons.

THE RELATIVE COST OF SHELTERED AND NONSHELTERED VOCATIONAL ENVIRONMENTS

The notion that all should contribute to the enterprise of the nation is a cultural expectation clearly imbedded in the fabric of American society. Indeed, if a person does not work, is

on welfare, is in need of extended unemployment compensation, or does not visibly contribute in some way, she is not nearly as valued, as respected, as absorbed as those who do. Americans have been remarkably understanding of the need to expend tax dollars in ways that support the realization of the dream that as many as possible contribute to the enterprise of our country. If those who work, produce, contribute, and pay taxes are valued and respected, and those who do not are not, how do severely handicapped adults fare? Generally, not well. Most would agree if a severely handicapped person absolutely cannot contribute to the enterprise of a community, so be it. Still, our obligation is to provide a decent and humane quality of life. However, the preferred cultural option is to contribute.

What would happen if, as a nation, we chose not to assume financial or programmatic responsibilities for severely disabled adults? While a few parents would have both the inclination and the financial resources to pay others directly to provide services to their children, the overwhelming majority could not afford to hire others to meet comprehensive direct service needs, and could not stay at home for financial, cultural, and/or personal reasons.

Fortunately, over the past few decades, taxpayers have assumed more of the responsibility for providing a variety of direct services to severely handicapped persons and providing no public

services to severely handicapped adults is not an option. However, taxpayers do have a right to require services that are fair and reasonable for all concerned. The position offered here is that when the vocational habilitation of severely handicapped adults is addressed, the least costly, the most cost efficient, and the highest quality services can be provided in nonsheltered as opposed to sheltered environments.

In sum, for severely handicapped adults to have no option but to stay at home with their parents is untenable; to place such persons in institutions is dangerous, antihabilitative, ridiculously costly, and cost inefficient; and to utilize sheltered workshops and activity centers is developmentally unsound, unnecessary, too costly, and too cost inefficient. Preparing for functioning in nonsheltered vocational environments requires less cost, results in more acceptable cost benefit ratios, and allows for a more reasonable quality of life.

If the statements delineated above can be ascribed even minimal credence, at least the following must be demonstrated:

> That it is <u>less costly</u> for severely handicapped adults to function in nonsheltered as opposed to sheltered environments;
>
> That taxpayers realize a <u>greater return for their investment</u> when severely handicapped adults perform meaningful work in nonsheltered environments; and
>
> That the <u>quality of life</u> for all concerned is better when functioning in nonsheltered environments is realized.

Cost. The cost per person in most sheltered vocational environments has been reported to range from $3,738 to in excess of $5,000 per year (Hill & Wehman, 1983; Sowers et al., 1979). At this time it is difficult to compare the costs of providing vocational services to severely handicapped adults in sheltered as opposed to nonsheltered environments because of the unavailability of data on precisely matched groups. However, there are rudimentary data that can be reasonably interpreted as suggestive that significant savings can be realized when severely handicapped persons are prepared to function in nonsheltered environments.

As of January, 1983, the average cost to the Dane County Unified Services Board of maintaining a severely handicapped graduate of the Madison Metropolitan School District in a sheltered environment in Madison, Wisconsin was approximately $5,251 per year. The average cost of maintaining a graduate in a nonsheltered environment was approximately $1,681 per year (F. Genter, Personal Communication, September 7, 1983). However, those who functioned in sheltered and nonsheltered environments spent an average of 6.0 and 4.4 hours per day in their work places respectively (Shiraga, 1983). If adjusted for this difference in time, the annual cost per person to the Dane County Unified

Services Board for nonsheltered functioning would be $2,303.

Upon examination of this information two questions seem obvious. First, "Why is it so costly to maintain one severely handicapped adult in a sheltered environment"? Some of the reasons are that sheltered environment costs include the financial responsibility for: group transportation to and from the facility, heat, the purchase of supplies and materials, the salaries of clerical personnel, insurance, and equipment (U.S. Department of Labor, 1977). In nonsheltered environments, those responsible for training and supervision are not paying for light, equipment, supplies, heat, rent, etc., at the work place. Almost all of the $1,681 per year is devoted to the salary and fringe benefits of the direct supervisor, a relatively small amount of overhead, and in some cases transportation to and from work.

Second, "Are those in sheltered environments less intellectually, and/or physically capable than those who function in nonsheltered environments"? While precisely controlled studies are not available, the follow-up studies of the severely handicapped graduates of the Madison Metropolitan School District conducted by VanDeventer et al. (1981) and Shiraga (1983) are interpreted as indicative of a negative answer. In fact, when the 49 graduates in the 1981 follow-up study who functioned in sheltered environments were compared with the 36 graduates in the 1983 follow-up study who functioned in nonsheltered environments,

there were more graduates in nonsheltered environments who were nonverbal, nonambulatory, visually or auditorily impaired, deaf, blind, cerebral palsied, and who were referred to as within the severe as opposed to the moderate range of mental retardation.

It should be noted and emphasized that without a longitudinal public school training program oriented toward functioning in nonsheltered environments, it is extremely doubtful that these cost figures would hold across settings. That is, if a severely handicapped person spent the first 20 years of her life on a ward of the local institution and upon reaching age 21, an adult service agency was asked to teach all the work and work related skills necessary for functioning in a nonsheltered environment, increases in the amount of training time and money needed would be mandatory. This does not mean that sheltered vocational environments should then be considered acceptable options for such persons. Given adequate training and supervision, the costs necessary to train and maintain them in nonsheltered environments should progressively decrease until they approximate the annual costs of persons who had access to nonsheltered vocational training from an early age.

Cost Efficiency. Cost efficiency refers to the economic and other returns realized from a financial investment. Two ways to determine cost efficiency are to evaluate the relative cost of programmatic outcomes and to consider the relative productivity

of individuals. Preparing for functioning in nonsheltered environments offers a greater return for invested tax dollars than training for functioning in sheltered environments for at least two reasons. First, given the relatively high annual cost of operating sheltered vocational programs and the few severely handicapped persons who progress to more productivity in nonsheltered environments (U.S. Department of Labor, 1977, 1979; Whitehead, 1979b), these high costs must be viewed as life long in nature. Second, severely handicapped adults in sheltered work environments often spend substantial proportions of time performing nonmeaningful work (Greenleigh Associates, Inc., 1975). The cost of producing this nonmeaningful work is substantial in that supervisors still have to be paid, transportation and overhead costs still have to be met, etc. Severely handicapped persons in nonsheltered vocational environments rarely, if ever, perform nonmeaningful work.

When analyzing the actual and projected costs and benefits of nonsheltered versus sheltered vocational programs, Schneider, Rusch, Henderson, and Geske (1981) found that at the end of the 10th year, an individual in nonsheltered employment could be expected to have earned $16,153 more than the cumulative cost of training, placement, and follow-up services. If that same individual had been employed in a typical sheltered setting, the earnings would never exceed the training costs, and the

cumulative cost over 10 years would be $50,276. Likewise, Hill and Wehman (1983) analyzed the costs incurred and the tax monies saved through the implementation of a nonsheltered job training and placement program for 90 moderately and severely handicapped workers and found that over a 4 year period, the total direct financial benefit to taxpayers was $90,376.

Before leaving the topic of cost efficiency it should be noted parenthetically that public schools have a responsibility to produce severely handicapped graduates who contribute to the enterprise of a community. Assume that the costs of progressing through two public school systems are approximately the same. Assume further that the graduates of School System A function in nonsheltered vocational environments at the average maintenance cost of $2,000 per year per person; that the graduates of School System B function in sheltered vocational environments at the average maintenance cost of $5,000 per year per person; and that productivity and earned income were constant across graduates. As the costs of training and dollars earned were approximately the same, but the costs of maintenance in adulthood were substantially higher for graduates of School System B, School System A is more cost efficient than School System B on the dimensions addressed.

Quality of Life. The phrase quality of life refers to the nature of the social and emotional characteristics of sheltered

and nonsheltered vocational environments. The quality of life possible in a handicapped only environment is substantially different from that which can be realized in an environment that is in accordance with the natural proportion. VanDeventer et al. (1981) interpreted their data as suggestive that the graduates of the Madison Metropolitan School District who functioned in sheltered vocational environments led unduly restrictive lives. That is, they interacted with too few nondisabled people, the number of environments in which they functioned per week was depressingly small, and the skills they were required to perform or to learn were remarkably few.

The situation for graduates who functioned in nonsheltered vocational environments was quite different (Shiraga, 1983). Specifically, they functioned in substantially more environments per week, they interacted consistently and intensively with a much wider variety of nondisabled persons; and they were required to learn and perform substantially more skills per day. Additionally, the social environments available in most nonsheltered vocational environments are more enhancing than those available in sheltered environments. Assume that a person has autism and and severe difficulties refraining from overt and disruptive self-stimulation, communicating meaningfully, and establishing social and emotional relationships with others. Should she spend 40 hours per week with other autistic and severely handicapped

persons with similar difficulties or with a wide variety of nondisabled persons? Clearly, her life will be more rich and varied if she functions in the presence of many nondisabled persons.

In sum, severely handicapped adults who function in nonsheltered environments have a greater probability of experiencing a more enhanced quality of life than their developmental twins in sheltered environments in that there are experiences that can be realized in nonsheltered environments that cannot be realized in sheltered environments. Some of these include experiencing:

Interactions with nondisabled persons;

The rich array of sounds and sights offered in the real world;

Friendships with nondisabled persons that extend beyond the work time and space;

Feelings of self-worth when a severely disabled person understands that his work is valuable and that if he did not do it, nondisabled persons would have to;

The respect offered by parents/guardians and nondisabled co-workers when one makes a contribution in a nonsheltered environment;

The sense of accomplishment associated with being allowed to take calculated risks and overcome initial obstacles and failure; and

The pride that comes from being in a position to help nondisabled persons.

AT WHAT AGE SHOULD DIRECT INSTRUCTION IN NONSHELTERED VOCATIONAL ENVIRONMENTS BEGIN?

Indirect vocational instruction refers to teaching skills and attitudes that are not those actually required in a real work environment; or teaching skills and attitudes that are actually required, but teaching them in some place other than a real work environment. Most would agree that indirect vocational instruction should start shortly after birth. That is, from an early age all children should be taught to complete tasks, to seek pride in what they do, to assume responsibility for the results of their action, to overcome obstacles in order to reach goals, to learn to cooperate with others, and that to struggle to achieve is an honored cultural endeavor. It is generally presumed that these cherished general skills and attitudes can be converted readily to the specifics needed for success in actual vocational environments. Unfortunately, this presumption of transferability is untenable when severely handicapped students are of concern.

Direct vocational instruction refers to teaching the actual skills and attitudes needed to function in a particular nonsheltered vocational environment in that actual environment. The direct vocational instruction of severely handicapped students should begin, unless medically contraindicated, no later than age 11 for at least the following reasons.

First, people are labeled severely intellectually handicapped because of learning and performance difficulties such as: the relatively large number of instructional trials and units of time needed to reach meaningful performance criteria; severe retention problems; and severe difficulties transferring training from one person, environment, material, or language cue to another (Brown, in press).

Second, few adult vocational service systems for severely handicapped adults are sufficiently instructional in nature (Gold, 1973; Nisbet, 1983; VanDeventer et al., 1981; Whitehead, 1979b). Thus, if a severely handicapped adult is to acquire the skills and attitudes needed for nonsheltered functioning, it is extremely important that those skills and attitudes be acquired prior to graduation.

Third, most severely handicapped adults who fail to survive in nonsheltered vocational environments do so because of attitudinal and social problems, not because of specific vocational skill difficulties (Gold, 1975, Greenspan, & Shoultz, 1981; Martin et al., 1979; Rusch et al., 1980; Sowers et al., 1979; Wehman, 1981). Many years and experiences are needed to develop these extremely important attitudes and social behaviors. Obviously, it is much easier to develop positive work attitudes in young children than it is to change the negative attitudes of adults.

Obviously, individual decisions about the instructional needs of each student must be made. However, several general rules seem tenable.

> Direct vocational instruction should start no later than age 11;
>
> At least 1 half-day or 3 hours per week should be spent receiving instruction in actual vocational environments by age 11;
>
> The amount of time spent in actual vocational environments should increase with age;
>
> No student should spend more than 2 years in a particular work environment prior to graduation;
>
> Over a 10 year period each student should be given intensive, individualized, and sustained instruction in at least five different nonsheltered work environments and at least four different types of meaningful work; e.g., food service, clerical, janitorial, and industrial;
>
> At about age 17 or 18 those responsible for the development of an individual should start making tangible projections and decisions about the actual environments in which that individual will function at graduation; and
>
> From approximately ages 19 to 21 a comprehensive school to postschool transition plan should be designed and implemented (Brown et al., 1981).

CHARACTERISTICS OF THE NONSHELTERED VOCATIONAL PREPARATION PROGRAM OFFERED BY THE MADISON METROPOLITAN SCHOOL DISTRICT

The vocational preparation program operated by the Madison Metropolitan School District is enormously diverse, complex, and dependent upon a wide variety of idiophenomena. Nevertheless, at least four major phases through which much of this program has

passed from 1969 to 1983 seem discernible. These phases are overlapping and cumulative in nature and exceptions can certainly be cited.

Phase I

During the late 1960's and early 1970's,School District and associated University of Wisconsin personnel assumed that severely handicapped students could not or would not function in nonsheltered vocational environments and arranged its services accordingly. The result was quite predictable: Almost all graduates lacked the skills and attitudes necessary for nonsheltered functioning. Specifically, from 1971 to 1978, 53 severely handicapped students completed their public education in the Madison Metropolitan School District. According to VanDeventer et al. (1981), only 1 functioned in a nonsheltered vocational environment as a half time dishwasher in a luncheonette, 3 spent almost their entire lives at home with their parents, and the remaining 49 spent their days in activity centers or sheltered workshops (See Table 1). Additionally, almost all were labeled "high functioning trainable level retarded" as during much of this time, most students with more severe disabilities were excluded or rejected from the school system.

Phases II-A and II-B

II-A. Several parents who in the early 1970's were very happy to have a public school system that served their children

became relatively disenchanted with the services offered as time passed. That is, after observing the development of their children for 5, 6, or 7 years they started to ask such questions as: "Is this the best that can be done?"; "Are we teaching the the things that really need to be learned?"; and "Where does this all lead?" The typical responses to such appropriate and penetrating questions were that sheltered vocational environments were the only or the best environments available upon graduation and thus school personnel should attempt to teach the skills and attitudes needed to succeed in those environments. Stated another way, why should school personnel spend valuable instructional resources teaching skills and attitudes that are required for nonsheltered functioning when it is known that as graduates their students will be confined to sheltered vocational environments?

II-B. While school personnel were utilizing the logic described in Phase II-A, those providing services to severely disabled adults utilized a slightly different conceptual system. Parents of severely disabled adults started to ask adult service providers why their children could not function in nonsheltered environments. Most of the responses offered were in the nature of: "The public school system has not taught your child the skills and attitudes necessary to function efficiently in nonsheltered environments"; "It is too late now"; and "Even if

we wanted to, we do not have the staff or the resources to provide the instruction and supervision necessary for nonsheltered training, placement, and maintenance."

Phases III-A and III-B

About 1976 more and more parents and professionals began to study, understand, and scrutinize the self-fulfilling prophecy, the circular reasoning, and the negative tracking that was so powerfully controlling almost everyone at the time.

III-A. A small number of public school and university personnel started hypothesizing that even though it was highly likely that these students would ultimately function in sheltered workshops or activity centers, they should at least be given a chance to demonstrate that they could actually perform in nonsheltered environments. Accordingly, components of the curriculum and service delivery model were modified to provide limited, but nevertheless significant, direct and systematic instruction in nonschool settings, including nonsheltered vocational environments.

III-B. While public school personnel were teaching a small number of students to function in nonsheltered vocational environments as a component of their public school programs, some adult service agency personnel and parents started to arrange for a few disabled adults to learn how to function in nonsheltered vocational environments.

Phase IV

During Phases I, II, and III there was little if any communication between parents of severely handicapped students and parents of severely handicapped adults, or between public school personnel and those who would provide direct services upon graduation. In 1980 public school personnel established cooperative working relationships with Vocational Education Alternatives, Inc., one of the agencies in the Madison area that provided nonsheltered services to a wide variety of disabled adults. At this writing approximately 20% of those served by this agency are severely handicapped. Thus, for the first time, a mechanism for coordinating school and postschool training and monitoring functions was established. This cooperative relationship between sending and receiving agencies and parents has played a significant role in the rather dramatic shift from sheltered to nonsheltered functioning. When the 50 severely handicapped students from Madison and Dane County who graduated from the Madison Metropolican School District from 1979-1983 were studied, 36 functioned in nonsheltered vocational environments, 10 functioned in sheltered environments, and 4 functioned in their homes (see Table 2 and Shiraga, 1983).

In an effort to communicate how one school system is attempting to provide reasonable vocational instruction to its severely handicapped students, some of the rudiments of the

service delivery model utilized by the Madison Metropolitan School District are delineated below. Before proceeding, the following should be noted:

> There are teachers, therapists, and others in the school district who actually utilize the model as described and there are others who do not;
>
> The model is designed so that teachers in concert with related service personnel, individual students, and their parents can adapt to constantly changing circumstances; and
>
> Some related service personnel such as physical, occupational, instructional aides, and communication therapists provide direct and consulting services in actual vocational environments.

Perhaps the most parsimonious strategy for communicating some of the more important components of the model would be to present operational information about the Vocational-Community Teachers in the Middle and High Schools, the School to Post-school Transition Teacher, and the Instructional Personnel Inventory Strategy.

Vocational-Community Teachers

Vocational-Community Teachers in the Madison Metropolitan School District provide little if any direct instruction on school grounds. Rather, almost all of their instruction is provided in nonschool vocational and community environments. For example, if three severely handicapped students are to be the instructional responsibility of a Vocational-Community Teacher on Monday morning, she might meet them in a school and then teach

them to take a public bus to a hospital where she would provide instruction on vocational skills in the pharmacy until approximately 11:00 a.m. At 11:00 a.m. they might take another public bus to a shopping center where she would teach restaurant use skills before returning to school at 12:30 p.m. In order that students receive appropriately comprehensive amounts of nonschool instruction, in addition to Vocational-Community Teachers, many classroom teachers also provide direct instruction in nonschool vocational and community environments.

During the 1983-84 school year the School District employed 6.2 Vocational-Community Teachers who were administratively assigned to a Special Education Coordinator at the Central Administration Building. They were then allocated to instructional teams at different middle and high schools.

Vocational-Community Teachers in Middle Schools

Middle schools serve severely handicapped students who are 11 to 15 years old. At the middle school level direct nonschool instruction in nonsheltered vocational environments is provided at least 1 half-day per week, starting at age 11 or 12. As a student progresses through chronological ages 13 and 14, the goal becomes that of providing at least 2 half-days per week of such instruction.

Figure 2 is presented in an attempt to communicate how Vocational-Community Teachers were distributed in three middle schools during the 1983-84 school year. At Schenk Middle School there were two classes of 8 and 6 severely handicapped students respectively and a .7 time Vocational-Community Teacher was assigned to that school. A similar situation existed at Jefferson Middle School. At Gompers Middle School an .8 time Vocational-Community Teacher was allocated because there were 19 severely handicapped students in three classes.

Vocational-Community Teachers in High Schools

High schools serve severely handicapped students who are 15 to 21 years old. At the high school level an increase in the amount of direct vocational instruction in nonsheltered environments per student is provided. In fact, as chronological age increases, up to 100% of a student's school schedule may be devoted to direct nonsheltered vocational and community related instruction. Obviously, it is crucial that the resources needed to provide increasing amounts of instruction be available.

Figure 3 is presented in an attempt to communicate structural information about Vocational-Community Teachers in three high schools during the 1983-84 school year. Three high schools had enrollments of 38, 38, and 37 severely handicapped students and one full time Vocational-Community Teacher was assigned to each.

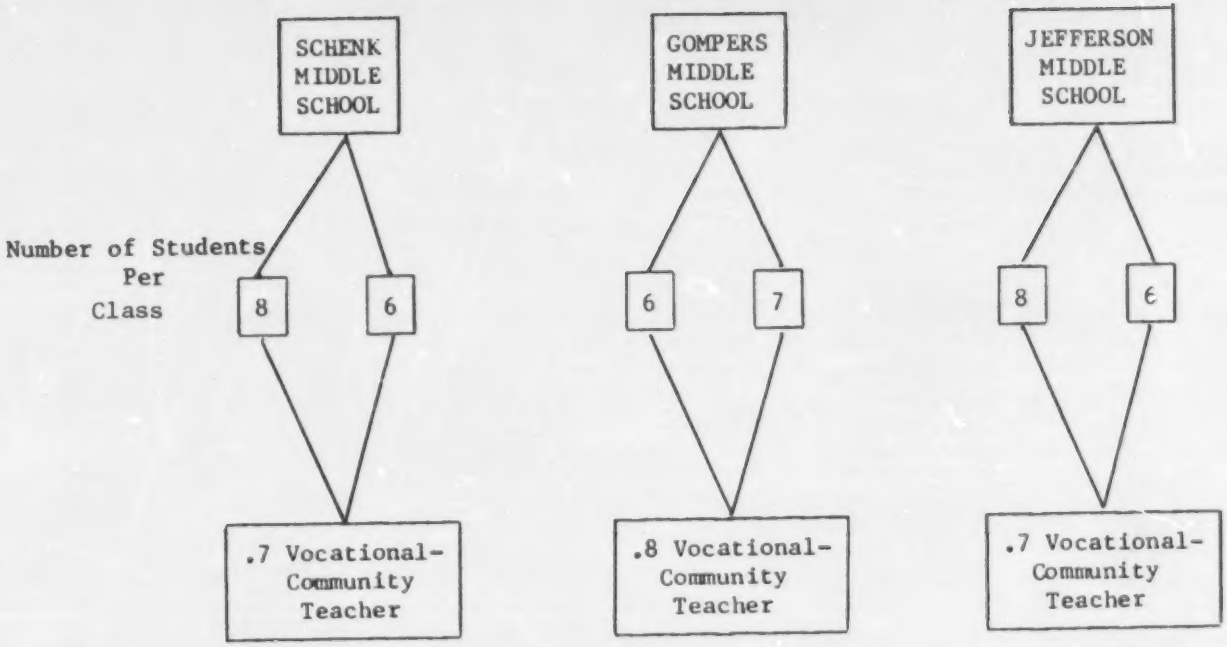

Figure 2. Vocational-Community Teachers in middle schools in the Madison Metropolitan School District during the 1983-84 school year.

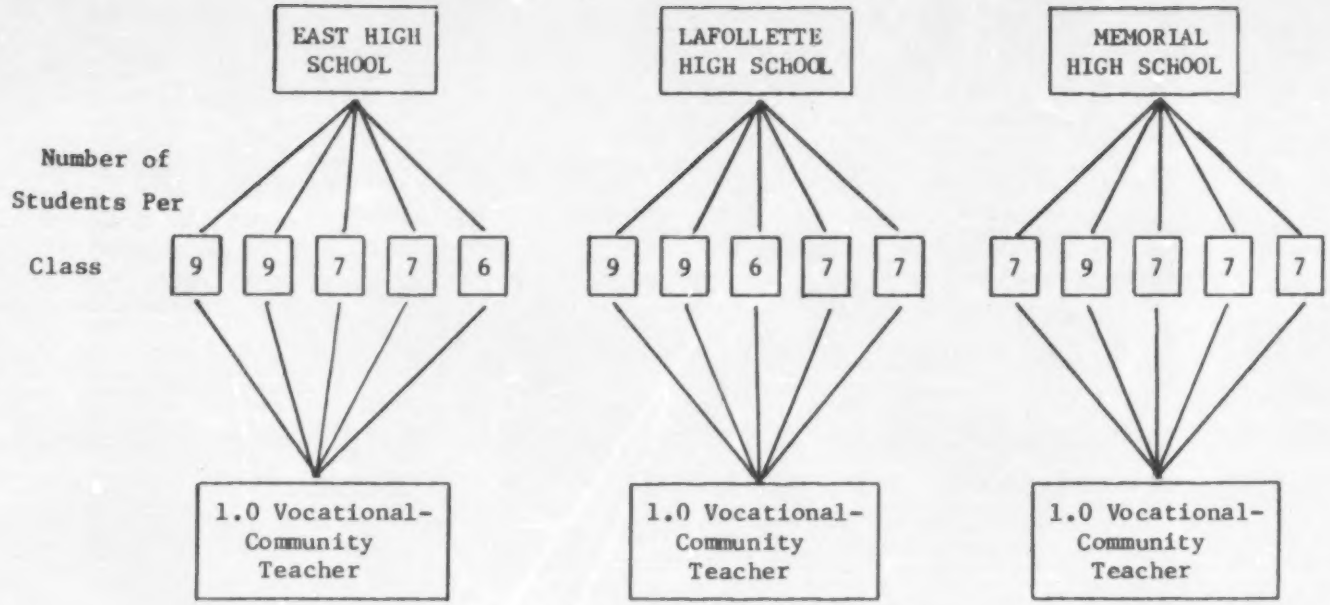

Figure 3. Vocational-Community Teachers in high schools in the Madison Metropolitan School District during the 1983-84 school year.

Twenty-two of the 38 students at East High School, 19 of the 38 students at LaFollette High School, and 17 of the 37 students at Memorial High School were residents of Central Wisconsin Center for the Developmentally Disabled. These were 58 of the approximately 100 nonMadison or Dane County residents who lived at the institution and attended school in Madison under a federal court order during the 1983-84 school year.

The School to Postschool Transition Teacher

The city of Madison in Dane County, Wisconsin claims a total population of approximately 170,000 and a gradually declining school age population of approximately 23,000. Of the Dane County residents who graduate from the Madison Metropolitan School District approximately 10-12 each year can now be expected to be severely handicapped.

In the past there was very little meaningful communication between public school and adult service personnel. In fact, when parents asked school personnel about what would happen to their children at the end of their public school careers, they were usually referred to other agencies. Certainly, such a situation worked quite well for some parents because they had the time, tenacity, skills, and the kinds of children for which extant adult service systems were designed. However, most parents could not arrange for individually habilitative adult vocational services. Consequently, their children stayed at home or

spent their days underachieving in sheltered workshops and activity centers. Spending 21 years of public education attempting to prepare a severely handicapped student to function in heterogeneous vocational, domestic, recreation/leisure, and general community environments is untenable, unless systematic arrangements are made to maximize the probability of actual functioning in those environments upon graduation.

In an attempt to enhance the probability that the skills and attitudes developed during years of public instruction would actually be utilized by severely handicapped graduates, the Transition Plan and the School to Postschool Transition Teacher position were developed. The Transition Plan is described more precisely elsewhere (Brown et al., 1981; Nisbet et al., 1983). In brief, such a plan has six major characteristics: it must be individualized; longitudinal; comprehensive; sending and receiving agencies and personnel must be involved; parents and guardians must be active participants; and related service personnel should offer functional expertise.

It is the responsibility of the School to Postschool Transition Teacher to coordinate the design and implementation of school to postschool transition plans for each severely handicapped Dane County resident graduating from the Madison Metropolitan School District. In addition to providing direct instruction in conjunction with a variety of other school personnel in nonschool environments, the Transition Teacher coordinates

monthly meetings with all middle and high school Vocational-Community Teachers, and also coordinates many of the efforts of teachers, parents, therapists, and the adult service agencies that will receive the student in the near future. One full time School to Postschool Transition Teacher is assigned to the three to five annual graduates of each of three high schools. As nonsheltered environments are those that do not violate the natural proportion, the number of new nonsheltered vocational environments that need to be developed each year ranges from approximately 6 to 10. Undoubtedly, the activities of the Transition Teacher in conjunction with parents/guardians, the Dane County Unified Services Board, and local adult vocational agencies that offer nonsheltered services have resulted in the dramatic and durable increases in the nonsheltered vocational placement, training, and maintenance of severely handicapped graduates.

Instructional Personnel Inventory Strategy

Obviously, the traditional instructional model of a classroom teacher and an aide assigned to 8, 9, or 10 severely handicapped students is insufficient to provide the critically needed low ratio, direct, and individualized instruction in nonsheltered settings. It is equally obvious that large infusions of new funds will not be made available for such programs

in most school districts. Thus, school districts will have to redirect resources and existing personnel will have to provide modified services in different places. Figure 4 is presented in an attempt to communicate one strategy that can be used to organize instructional personnel so as to allow reasonable amounts of nonschool instruction. As can be discerned from Figure 4, on Monday afternoon only a teacher and an instructional aide are assigned to the class of 10 severely handicapped students. It is probably inappropriate to attempt to provide nonschool vocational instruction during this time for a variety of obvious reasons. On Tuesday afternoon, however, a teacher, an instructional aide, a Vocational-Community Teacher, and a speech and language therapist are assigned to the 10 students. Obviously, this is a time when nonschool instruction could be provided quite efficiently.

Nonschool and Nonsheltered Vocational Training Environments

During and prior to the 1974-75 school year the Madison Metropolitan School District operated a public school program for severely handicapped students that was clearly designed to prepare for functioning in sheltered environments in adulthood. The only vocational training experiences provided were offered in simulated sheltered workshops on the grounds of segregated schools. During the 1975-76 school year it was decided by some that nonsheltered

	Days				
	M	T	W	Th	F
A.M.	T ST A	T A PT ST	T ST A	T ST A SL	T ST VC A
P.M.	T A	T A VC SL	T A	T A PT	T A VC

Figure 4. Instructional personnel assigned to a class of 10 severely handicapped students.

CODE

T = Teacher
A = Aide
VC = Vocational Community Teacher
SL = Speech and Language Therapist
PT = Physical Therapist
ST = Student Teacher

environments should be utilized for at least the highest functioning students. Thus, one of the responsibilities of school personnel became that of locating and developing nonschool and nonsheltered vocational environments that could be used for training purposes (Sweet et al., in press). During 1975-76, of course, there were few such environments. However, because of the success of this change in direction and the corresponding strong support from parents, school personnel, and the Madison business community, the number of nonsheltered environments and the number of severely handicapped students who received training in these environments increased substantially over time. More specifically, during the 1975-76 school year 17 severely handicapped students received instruction in 4 nonsheltered environments (Pumpian et al., 1980). During the 1982-83 school year 143 severely handicapped students received instruction in 58 nonsheltered environments. Table 5 is presented in an attempt to communicate basic information about the actual environments utilized for training purposes during the 1982-83 school year.

CHARACTERISTICS AND EXAMPLES OF NONSHELTERED VOCATIONAL SERVICE DELIVERY MODELS FOR SEVERELY HANDICAPPED ADULTS

Of the many reasons why severely handicapped adults function vocationally in sheltered environments, three seem particularly

Table 5

Nonschool and Nonsheltered Vocational Training Environments Utilized by Severely Handicapped Students in the Madison Metropolitan School District During the 1982-83 School Year

Environment	Type of Work	Days and Times	Persons in Environment		Chronological Age
			Approximate # of Nonhandicapped Persons	# of Students	
Bittersweet Restaurant	Janitorial	Wed. 9:00-10:30	9	2	14,15
Chez Michel Restaurant	Food preparation	Wed. 8:15-10:45	11	3	13,13,13
Ivy Inn Motel	Housekeeping	Thurs. 9:30-11:00	35	2	13,15
Ovens of Brittany Restaurant	Food preparation	Thurs. 9:00-10:45	45	2	11,13
Concordance Natural Food Store	Packaging, weighing, pricing, and stocking grocery items	Thurs. 9:00-10:45	45	2	13,15
L'Escargot Restaurant Office	Clerical	Wed. 1:00-2:30	10	2	14,15
University of Wis. Student Union	Clerical	Thurs. 1:00-2:30	115	2	15,15
University of Wis. Student Union	Busing and setting tables, and refilling condiment containers	Tues. 9:30-11:00	120	3	11,13,14
Hill Farms State Office Building	Clerical	Fri. 1:00-2:30	35	3	13,13,15
Madison Public Library, Meadowridge Branch	Stamping and repairing books, and straightening shelves	Fri. 1:00-2:30	30	3	12,13,13
Wilson State Office Building	Clerical	Fri. 1:00-2:30	32	3	13,14,15
Moravian Church	Janitorial	Mon. 9:00-10:30	3	2	13,13
Mother's Pub Restaurant	Janitorial	Fri. 9:30-11:00	6	2	14,14
Washington Hotel	Janitorial	Tues. 12:15-2:15	9	2	13,13
The Headstart Center	Clerical and food preparation	Weds. 12:30-2:00	10	2	13,13
Madison Public Library, Lakeview Branch	Clerical	Tues. 9:00-10:30	13	2	14,14
Chet's Standard Station	Janitorial	Tues. 8:30-11:30	30	2	13,13
Wis. School of Electronics	Clerical and assembly	Mon. 12:15-2:15	85	4	14,14,15,15
The Moose Lodge	Janitorial and dishwashing	Mon. 8:30-11:30	9	3	11,13,15
The Moose Lodge	Janitorial and dishwashing	Thurs. 8:30-11:30	9	3	11,13,14
The Family Practice Clinic	Clerical and janitorial	Mon, Thurs. 12:45-3:15	55	2	15,15
St. Mary's Hospital	Clerical	Tues.,Thurs. 9:15-11:30	75	3	15,16,19
American Red Cross	Clerical	Mon.,Weds. 12:30-2:15	14	3	15,16,17

Table 5 (Continued)

Environment	Type of Work	Days and Times	Persons in Environment		Chronological Age
			Approximate # of Handicapped Persons	# of Students	
Lake Edge Lutheran Church	Clerical	Fri. 9:45-11:30	15	3	17,18,18
Madison Public Library Downtown Branch	Clerical and book repair	Mon. 12:45-2:00	45	4	15,16,17,20
The Jackson Medical Clinic	Operating photo copy machinery	Tues. 12:45-2:00	15	2	17,19
Dane County Social Services Administration Building	Clerical	Tues. 12:45-2:00	24	2	17,20
Wis. Women's Network	Clerical	Fri. 12:45-2:00	12	4	16,18,18,20
St. Mathew's Daycare Center	Janitorial	Tues., Thurs. 12:45-3:00	6	2	16,20
Dane County Parks Department	Janitorial and grounds maintenance	Weds., Fri.	12	3	15,16,19
University of Wis. Physics Department	Disassembling and salvaging of computer hardware	Mon., Weds. 8:30-11:00	10	4	18,18,20,20
Special Olympics Office	Clerical and assembly	Weds. 12:45-2:00	12	2	17,18
Special Olympics Office	Clerical and assembly	Thurs. 12:45-2:00	12	3	17,18,19
Allied Plumbing Co.	Janitorial, sorting plumbing supplies and salvaging parts for recycling	Mon., Tues. 9:30-11:15	4	3	18,18,20
East Side Businessmen's Association Social Club	Janitorial and grounds maintenance	Mon., Weds. 9:45-11:00	1	4	18,18,18,20
Rocky Rococo's Pizza Restaurant	Janitorial	Mon. through Fri. 8:30-10:30	10	1	21
Madison Public Library Pinney Branch	Clerical	Weds. 9:30-11:00	12	3	17,19,19
Immaculate Heart Church	Janitorial	Weds. 9:30-11:00	1	4	17,17,19,19
Immaculate Heart Church	Janitorial	Thurs. 9:30-11:00	1	3	17,17,17
March of Dimes	Clerical	Weds.,Thurs. 9:30-11:00	6	3	17,18,19
American Family Insurance	Clerical	Weds.,Thurs. 9:30-11:00	33	3	19,20,20
Howard Johnson's Motel Housekeeping Department	Housekeeping	Mon., Weds. 8:45-11:00	23	3	18,19,20
Howard Johnson's Motel Laundry	Sorting, folding and storing linen	Mon.,Weds. 8:45-11:00	13	2	16,17
Calvary Lutheran Church	Janitorial and clerical	Mon.,Weds. 9:45-11:15	10	2	16,16
University of Wis. Student Union (South)	Janitorial	Tues., Fri. 9:00-11:30	110	3	17,17,20
Church of the Living Christ	Janitorial	Fri. 11:30-2:30	3	3	17,20,20

Table 5 (Continued)

Environment	Type of Work	Days and Times	Persons in Environment		Chronological Age
			Approximate # of Handicapped Persons	# of Students	
University of Wis. Hospital and Clinics-Central Service Department	Labeling hospital supplies	Tues.,Thurs. 12:00-3:30	200	2	16,20
University of Wis. Hospital and Clinics-Central Service Department	Labeling hospital supplies	Mon.,Weds. 9:45-11:00	200	3	17,18,19
University of Wis.Hospital and Clinics-Materials Redistribution Department	Packaging surgical instruments	Tues.,Thurs. 12:00-3:30	200	2	19,20
University of Wis. Hospital and Clinics-Pharmacy	Unpacking pharmacy supplies, sorting pills and labeling supplies	Tues.,Thurs. 12:00-3:30	200	2	16,16
Methodist Hospital	Housekeeping, clerical and packaging and labeling hospital supplies	Weds., Thurs. 12:00-2:00 12:45-2:00	35	2	17,18
Veteran's Administration Hospital-Outpatient Pharmacy	Packaging, labeling, filling and opening pharmacy supplies, and clerical	Tues., Thurs. 8:30-11:30	175	3	18,18,19
Veterans's Administration Hospital-Inpatient Pharmacy	Packaging, labeling, filling, opening and washing pharmacy supplies	Mon. through Fri. 8:30-11:30	175	1	21
Veteran's Administration Hospital-Special Products Distribution Department	Packaging, wrapping, and labeling surgical supplies	Tues.,Thurs. 8:30-11:30	175	2	17,19
Veteran's Administration Hospital-Ambulatory Care	Clerical	Tues.,Thurs. 8:30-11:30	175	1	19
McArdle Cancer Research Laboratory	Washing and storing laboratory equipment	Mon. through Fri. 1:00-3:00	20	1	21
Langdon Street Grocery Cooperative	Stocking shelves	Tues.,Thurs.,Fri. 1:00-3:00	35	2	21,21
American Automobile Association	Clerical	Mon., Weds.,and Fri 9:00 - 12:00	85	3	21,21,21
WHA Radio Station	Clerical	Tues., Weds., and Thurs. 12:30 - 3:00	55	1	21
Madison Fire Station, #1	Janitorial and Washing vehicles	Mon.,Weds.,and Fri. 1:00 - 3:00	45	3	21,21,21
Wisconsin State Capitol	Clerical	Tuesday 1:00 - 3:30	50	2	21,21
Rocky Rococo's Pizza Restaurant (West Towne)	Janitorial	Mon. through Fri. 9:00 - 10:30	40	1	21
Capitol Center Foods	Janitorial and Stocking shelves	Tues., Thurs. 1:00 - 3:30	110	1	21

relevant here. First, the necessary attitudes and skills for non-sheltered functioning have not been developed during their first 21 years because of less than acceptable preparatory experiences. Second, service delivery systems are not ideologically, conceptually, financially, or technologically engineered to foster nonsheltered functioning over long periods of time. Indeed, when one communicates with the typical Vocational Rehabilitation Counselor about arranging for a severely handicapped adult to function in a nonsheltered environment, one is almost always informed of a caseload so large that all that can be offered is extended sheltered maintenance and supervision. Third, most service delivery models that arrange for disabled adults to work in nonsheltered environments utilize the four step strategy of assessment, episodic training, placement and closure. That is, the general functioning of a client is assessed. As a result of the assessment, the client is provided with short term training. At the completion of training, she is placed in a nonsheltered work environment. She is followed for a brief period of time and then her case is closed (Horner & Bellamy, 1979). This is a particularly inappropriate strategy for use with severely handicapped adults because throughout their lives they will need training and supervision in order to function efficiently in nonsheltered environments. Closure is rarely, if ever, appropriate.

If the severely handicapped adults of the future are to function productively in nonsheltered vocational environments, an overwhelming majority of the service delivery systems currently operative will have to be modified substantially or discarded. Vocational service delivery models that feature at least the following characteristics are certainly needed.

They Must Be Instructional in Nature

There can be no doubt that severely handicapped adults need direct and continuous instruction by skilled and inclined personnel throughout their working lives. Service delivery models that offer individually meaningful assessment, placement, and continuous training and monitoring are mandatory.

They Must Be Low Ratio in Nature

Those responsible for the direct training and supervision of individual severely handicapped adults in nonsheltered environments should not be responsible for more than approximately 12 persons. Further, these 12 persons should be heterogeneous in nature so that reasonable compromises in the allocation of time and resources can be realized. It is not advisable for someone to assume responsibility for 12 persons with autism or 12 persons who function in wheelchairs or 12 persons with relatively severe behavior problems. Responsible balances between behavior problems, mobility difficulties, functioning levels, and supervision needs must be arranged.

Coordination Between Those Responsible for Vocational Functioning and Those Responsible for Domestic and Recreation/Leisure Functioning Must Be the Rule

The more severely handicapped persons function in nonsheltered environments that are in accordance with the natural proportion, the more obvious is the need for active and continuous coordination between those who play significant roles in the total life space of an individual. For example, many nonsheltered environments require specific grooming and dressing standards that are not needed in many sheltered environments. Thus, it must be arranged that severely handicapped persons adhere to these standards. This adherence requires frequent and effective communication and cooperation between those responsible in both vocational and domestic environments.

Relevant Related Services Must Be Incorporated

In order to adequately meet the vocational training needs of many severely handicapped adults, the expertise of a variety of competent related service personnel such as physical, occupational, and communication therapists is often required. Consider the disastrous long range effects that might be incurred if a severely physically handicapped person was taught to package surgical instruments in a hospital in such a way that the required movements served to decrease range of motion, impede blood circulation, and place unnecessary and painful strain on certain muscles. Clearly, the expertise of a competent physical therapist would have been in order, both prior to and during training.

Communication and Coordination Between School and Postschool Agencies Must Be Meaningful

Vocational success in adulthood is often a function of complementary and cooperative relationships between school and postschool agency personnel. With professionally responsible cooperation comes effective long range planning, efficient problem solving, smooth transitions, comprehensive rather than segmented orientations, and the inevitable compromises so critical for success.

At this time three examples of service delivery models that offer reasonable potential for providing the services needed to maintain severely handicapped adults in nonsheltered vocational environments seem reasonable:

The Technical School-Community College Model;

The Nonsheltered Environment Only Model; and

The Sheltered and Nonsheltered Environment Model.

However, before each of those models is discussed, it seems appropriate to present some of the reasons why the ubiquitous Sheltered to Nonsheltered Environment Model is not afforded credence.

Those who operate sheltered vocational environments often attest to a "continuum of services" designed to move disabled adults

from sheltered to nonsheltered environments. To some, this model seems quite reasonable. However, when the history and production records of severely handicapped adults in sheltered models is examined, severe reservations are in order (General Accounting Office, 1977; Greenleigh Associates, Inc., 1975; U.S. Department of Labor, 1977, 1979; Whitehead, 1979). If severely handicapped adults leave one sheltered environment, it is almost always because they are being rejected for behavioral, medical, or productivity reasons. That is, they are almost always ejected to less demanding and more sheltered environments, including their homes (VanDeventer et al., 1981). The utilization of a sheltered to nonsheltered model is particularly dangerous for severely handicapped adults because when large groups of handicapped people are considered for possible movement from sheltered to nonsheltered environments, the higher functioning almost always receive priority; i.e., the necessary training and related resources (Bellamy et al., 1983). The three models described below are endorsed because they offer immediate access to training and support in nonsheltered environments.

The Technical School-Community College Model

Technical Schools and Community Colleges offer training programs designed to teach nondisabled and mildly disabled persons many of the specific vocational skills needed to succeed in a wide variety of nonsheltered vocational environments and in many

situations have been remarkably effective. Keypunch operators, automobile service persons, and electronic circuit board assemblers are but a few examples. The Technical School-Community College model can be adapted quite easily to the needs of severely disabled adults. Ideologically, conceptually, and technologically appropriate professionals could be hired and assigned the responsibility of teaching approximately 12 severely handicapped adults the attitudes and skills necessary to function in nonsheltered work environments. While these professionals would be based at the school, most, if not all, of the actual training and supervision could be provided in actual nonsheltered environments (Goetz, Lindsay, Rosenberg, & Sailor, 1983).

The Nonsheltered Environment Only Model

Nonsheltered Environment Only Models are those that are founded upon the premise that disabled adults should be prepared to function in the same environments as their nondisabled peers. Vocational Education Alternatives, Inc. of Madison, Wisconsin is one example. This private corporation exists solely to assist a wide variety of disabled adults, approximately 20% of whom are severely handicapped, to function in nonsheltered vocational environments. Over the past 3 years this adult service agency with funds provided by the Dane County Unified Services Board has hired professionals skilled in the instruction of severely handicapped persons so as to successfully maintain 36 severely handicapped

graduates of the Madison Metropolitan School District in nonsheltered work environments (Shiraga, 1983). One result of this success has been that the Dane County Unified Services Board has arranged for the establishment of an additional Nonsheltered Only model, Work Opportunity in Rural Communities, to serve severely handicapped adults in two of the smaller towns in the county.

The Sheltered and Nonsheltered Environment Model

Sheltered and Nonsheltered Environment models are those that have added to an already existing sheltered environment model the option of providing severely handicapped adults with long term training and maintenance in nonsheltered environments. The critical difference between the Sheltered and Nonsheltered Environment model and the Sheltered to Nonsheltered Environment model is reflected in criteria for access to nonsheltered environments. Sheltered to Nonsheltered models almost always require that an individual "prove" that she is "ready" to learn to function in a nonsheltered environment. Sheltered and Nonsheltered models offer immediate training and supervision in actual nonsheltered environments when they are requested by the severely handicapped adult or the significant others in her life.

Goodwill Industries of Madison, Wisconsin is one example. Many of the staff members at Goodwill provide services within a sheltered workshop. However, with funds provided by the Dane County Unified Services Board additional personnel whose sole

responsibility is to provide training and supervision to those individuals who prefer a nonsheltered option have been hired. As of August, 1983, these personnel were supervising five severely handicapped graduates of the Madison Metropolitan School District in nonsheltered environments. In addition, at this writing the Dane County Unified Services Board is in the process of arranging for Pathways, Inc., an agency in Madison, Wisconsin that offers sheltered services to developmentally disabled adults, to add a nonsheltered option to its program.

CONCLUSION

This chapter is a mixture of philosophy, ideology, empiricism, pragmatism, frustration, and hope. In affirmation, several important phenomena have been demonstrated: severely handicapped persons can be taught to perform meaningful work in nonsheltered environments; public school programs can be engineered so as to provide rational and functional preparatory experiences for many of their lowest intellectually functioning students; adult service systems can be engendered so as to arrange for a reasonable number of severely handicapped persons to function in nonsheltered vocational environments over long periods of time; and nonsheltered is clearly more cost-efficient than sheltered functioning.

On the other hand, the data, concepts, and related information presented force the professional community to address a series of

critical ideological, conceptual, and empirical issues, some of which are presented below.

> Can the graduates and other severely handicapped persons be maintained in nonsheltered environments over a lifetime?
>
> Of the national population of severely handicapped persons, how many in fact can function in nonsheltered vocational environments, how many can function best elsewhere, and how do we decide who goes where?
>
> Can the outcomes secured in one community be realized in different parts of the country, in communities of different sizes, ethnic and racial mixtures, etc.?
>
> How can generations of attitudes, expectations, values, funding patterns, legislation, and administrative codes be modified in order to allow severely disabled adults to perticipate in competitive enterprise?
>
> Can we as a nation develop the comprehensive service delivery models and technical expertise so that a wide variety of severely handicapped adults can function in large numbers of nonsheltered environments?
>
> How can we adapt, modify, change, or otherwise engineer public school systems so that functioning in nonsheltered environments becomes the standard, not the exception?

In the past we assumed that severely handicapped persons could not perform meaningful work. We were wrong. We then assumed that although they could perform some meaningful work, they could only function in sheltered environments. We were wrong again. Now there are those who offer that they can perform meaningful work in nonsheltered environments, but assume nonhandicapped employers and workers do not want them around. Wrong again.

The dream expressed here is that in the near future severely handicapped persons will not live in institutions, will not attend segregated schools, and will not be confined to handicapped only environments of any kind. To the contrary, as adults they will live, work, and play in a wide variety of environments that contain nondisabled people, and experience the rich variety of stimuli so critical to a decent, humane, and productive quality of life. As such a dream is a fact for only a few, the task is to make it a national objective and, shortly, a national reality.

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